University of the State of New York 19 2

New York State Museum

FREDERICK J. H. MERRILL Director
CHARLES H. PECK State Botanist

Bulletin 67

BOTANY 6

REPORT OF THE STATE BOTANIST 1902

To the Regents of the University of the State of New York

I have the honor of submitting to you the report of work done in the botanical department of the State Museum during the past year.

Specimens of plants for the herbarium have been collected in the counties of Albany, Columbia, Essex, Fulton, Hamilton, Herkimer, Oneida, Rensselaer, Saratoga, Suffolk, Washington and Westchester. Specimens have been received from correspondents that were collected in the counties of Albany, Cayuga, Delaware, Erie, Essex, Herkimer, Monroe, New York, Oneida, Onondaga, Ontario, Saratoga, Schenectady, Seneca, Schoharie, St Lawrence, Suffolk, Tioga, Wayne and Westchester.

The specimens collected and contributed represent 289 species, of which 235 belong to the collections of the botanist, 54 to those of correspondents; 59 are new to the herbarium, 230 are now more fully and completely represented than before. Of the 59 species, 17 are considered new species and are herein described as such. Of these, 15 are among the collections of the botanist, two belong to those of correspondents. All of the new species are fungi. The number of species added to the flora of the State is 73, but 14 of these have previously been united with other species either as forms or varieties. They have recently been published as distinct species and are now included in the additions to our flora. A list of the species of which specimens have been added to the herbarium is marked A.

Names of species added to our flora, together with notes concerning their habitats, localities, time of collection of the specimens and descriptions of new species, are contained in a part of the report marked C.

The number of persons who have contributed specimens is 52. Their names and their respective contributions are recorded in a part of the report marked B. Some of these contributions consist of specimens of extralimital species and are not included in the enumeration just given. Some of the specimens were sent for identification; but, if for any reason their preservation seemed desirable and they were in sufficiently good condition, they have been preserved and credited to the sender as a contribution. The number of those who have sent specimens for identification is 90. The number of species identified for them is 1054. These are chiefly fungi.

Remarks and results of observations on previously reported species, new stations of rare plants, unusual habitats and descriptions of new varieties are given under D.

During summer and early autumn the weather was unusually wet and showery, a condition often supposed to be favorable to mushroom growth. Nevertheless, the result was by no means an abundant crop. Many species which in ordinarily moist seasons grow gregariously or are scattered through fields and woods in abundance were either wholly wanting or were few and far apart. Certain species of Amanita, Lepiota, Lactarius and Russula, which are usually common were noticeably scarce or not seen at all. The common mushroom crop was almost a complete failure. The prevailing low temperature combined with an excess of moisture probably prevented the development of the mycelium and caused the absence of many species. But opportunity was afforded for the trial of the edible qualities of several of our wild mushrooms. Of those tested, eight species have been found edible. Colored figures of natural size have been prepared to illustrate these, and descriptions have been written according to the plan followed in similar cases in previous reports. These descriptions constitute a part of the report marked E.

The investigation of our Crataegus flora, which was begun last year, has been continued. The close resemblance many of our

species of Crataegus have to each other and the need of a correct knowledge of all their distinguishing characters in order to identify the species satisfactorily, make it necessary to have specimens showing flowers, mature fruit, immature and mature foliage. Our species blossom in May and early in June, but do not ripen their fruit till late in August, during September and early in October. It is therefore necessary to make at least two collections of samples from each individual tree or shrub to be identified. One taken in flowering time will show the flowers and young leaves, the other taken in fruiting time should show the ripe fruit and mature leaves. It is desirable also to have samples of young and vigorous shoots with their mature leaves, which often differ somewhat from the leaves of ordinary shoots; also of twigs of the first and second year's growth and of the early growth of the season with stipules and thorns. Specimens of all the unrecognized species of Crataegus growing in the vicinity of Albany and in the Champlain valley from Fort Ann on the south to Westport on the north and in North Elba have been collected. The localities in the immediate vicinity of Albany have been visited several times; those in the Champlain valley, in North Elba and the country between it and Westport twice; once in May and early June and once in September. A large amount of material has been collected, duplicate specimens having in all cases been taken. By reason of the peculiar difficulties attending the identification of these plants, owing to the confusion of species and the omission in older descriptions of any record of characters now deemed important, it has seemed best to avail myself of the aid of Professor C. S. Sargent, the distinguished dendrologist and specialist in this branch of botany. Accordingly a set of these specimens has been sent to him for identification.

Mr F. E. Fenno, an active botanist of Tioga county, has from time to time contributed to the herbarium specimens of rare and interesting plants from his county. He has given much time to the collection and study of the plants of his region and has recently sent me a very full annotated list of the species known from his own observation to occur there. In all doubtful cases these have been identified by specialists. The *Illustrated Flora*

has chiefly been followed in the arrangement and nomenclature of the list, and the territory covered is described as the Susquehanna valley and adjacent hills of Tioga county. This territory includes the greater part of the southern half of the county. It is apparently rich in species, the list containing a remarkable number for such a limited region. It has therefore seemed to me desirable that this list should be published. It, with the *Flora of the Upper Susquehanna* by W. N. Clute, will give a very fair knowledge of what species of flowering plants and ferns occur in the southern central part of our State and will be an aid in determining the range of little known and rare species. It has therefore been added to this report as appendix F.

Respectfully submitted

CHARLES H. PECK
State Botanist

Albany, Dec. 3, 1902

A

PLANTS ADDED TO THE HERBARIUM

New to the herbarium

Delphinium ajacis *L.*
Lepidium ruderale *L.*
Hypericum boreale (*Britton*) *Bicks.*
Lactuca scariola *L.*
Hypochaeris radicata *L.*
Artemisia stelleriana *Bess.*
Xanthium commune *Britton*
Aster roscidus *Burpee*
Matricaria matricarioides (*Less.*) *Porter*
Antennaria fallax *Greene*
A. ambigens (*Greene*) *Fern.*
A. brainerdii *Fern.*
A. petaloidea *Fern.*
Pottia riparia *Aust.*
Tortula ruralis *Ehrh.*
Racomitrium heterostichum *Brid.*
Encalypta rhabdocarpa *Schwaegr.*
Hypnum lindbergii *Limpt.*
Liochlaena lanceolata *Nees*
Tricholoma radicatum *Pk.*
Clitocybe inversa (*Scop.*) *Fr.*
Mycena rugosoides *Pk.*
Hygrophorus subrufescens *Pk.*
Lactarius luteolus *Pk.*
Russula magnifica *Pk.*
R. earlei *Pk.*
Marasmius biformis *Pk.*
M. leptopus *Pk.*
M. insititius *Fr.*
M. thujinus *Pk.*
Leptonia hortensis *Pk.*
Flammula pusilla *Pk.*
Craterellus subundulatus *Pk.*
Clavaria crassipes *Pk.*
Secotium warnei *Pk.*
Licea variabilis *Schrad.*
Aecidium ligustri *Strauss*
Cintractia affinis *Pk.*
Phyllosticta grisea *Pk.*
Gloeosporium phacosorum *Sacc.*
Sporotrichum pose *Pk.*
Penicillium digitatum (*Fr.*) *Sacc.*
P. pallidofulvum *Pk.*
Macrosporium lagenariae *Thum.*
Fusarium laxum *Pk.*
Stilbum resinariae *Pk.*
Helvella ambigua *Karst.*
Detonia fulgens (*Pers.*) *Rehm*
Geopyxis carbonaria *A. & S.*
Calloria caulophylli (*E. & E.*) *Rehm*
Lachnum inquilinum (*Karst.*) *Schroet.*
Sclerotinia smilacinae *Durand*
Ciboria americana *Durand*
C. sulphurella (*E. & E.*) *Rehm*
Caldesia sabinae (*Dellot*) *Rehm*
Peziza violacea *Pers.*
Helotium scut. vitellinum *Rehm*
Ascobolus atrofuscus *Ph. & Pl.*
Melanospora vervecina (*Desm.*) *Fckl.*

Not new to the herbarium

Actaea rubra *L.*
Agrimonia striata *Mx.*
Agrostis stolonifera *L.*
Amorpha fruticosa *L.*
Amelanchier canadensis (*L.*) *Med.*
Anthemis cotula *L.*
Antennaria canadensis *Greene*
A. neglecta *Greene*
A. plantaginea *R. Br.*
A. neodioica *Greene*
Arenaria groenlandica (*Retz.*) *Spreng.*
Arisaema pusillum (*Pk.*) *Nash*
Asclepias exaltata *Muhl.*
Aster concinnus *Willd.*
A. schreberi *Nees*
Brassica rapa *L.*
B. arvensis (*L.*) *B. S. P.*
Blephilia hirsuta (*Pursh*) *Torr.*
B. ciliata (*L.*) *Raf.*
Calamagrostis inexpansa *Gray*
Campanula rotundifolia *L.*
Cassia nictitans *L.*
Chelidonium majus *L.*
Chrysopis graminifolia (*Mx.*) *Nutt.*
Chrysanthemum leucanthemum *L.*
Convolvulus arvensis *L.*

Convolvulus spithamaeus *L.*
Cypripedium hirsutum *Mill.*
Dianthus armeria *L.*
Drosera rotundifolia *L.*
Erigeron ramosus (*Walt.*) *B. S. P.*
E. philadelphicus *L.*
Eriophorum polystachyon *L.*
Eupatorium maculatum *L.*
Fraxinus americana *L.*
Gallium concinnum *T. & G.*
Gentiana andrewsii *Griseb.*
Geranium maculatum *L.*
G. carolinianum *L.*
Habenaria clavellata (*Mx.*)
Hamamelis virginiana *L.*
Helianthus giganteus *L.*
Houstonia longifolia *Gaert.*
Hypericum mutilum *L.*
Kneiffia pumila (*L.*) *Spach*
Lactuca sagittifolia *Ell.*
Lobelia cardinalis *L.*
Lepidium virginicum *L.*
L. spetalum *Willd.*
Lilium canadense *L.*
Linaria canadensis (*L.*) *Dum.*
Lycopus communis *Bicknell*
Malus malus (*L.*) *Britton*
Malva rotundifolia *L.*
Medicago sativa *L.*
Myriophyllum humile *Raf.*
Onagra oakesiana (*Gray*) *Britton*
Origanum vulgare *L.*
Panax trifolium *L.*
Panicum lanuginosum *Ell.*
Polymnia can. radiata *Gray*
Physalis het. ambigua (*Gray*) *Rydb.*
Polygonum convolvulus *L.*
P. hartwrightii *Gray*
Potentilla anserina *L.*
P. canadensis *L.*
P. pumila *Poir.*
Quercus alexanderi *Britton*
Ranunculus abortivus *L.*
Raphanus raphanistrum *L.*
Ribes rubrum *L.*
Rhynchospora macrostachya *Torr.*
Rubus hispidus *L.*
R. procumbens *Muhl.*
R. occid. pallidus *Bail.*
Sporobolus longifolius (*Torr.*) *Wood*
Sporobolus neglectus *Nash*
Salix balsamifera (*Hook.*) *Barratt*
Salsola tragus *L.*
Sanicula gregaria *Bicknell*
Saxifraga virginiensis *Mx.*
Sibbaldiopsis tridentata (*Soland.*) *Rydb.*
Taraxacum taraxacum (*L.*) *Karst.*
T. erythrospermum *Andrz.*
Tetragonanthus deflexus (*Sm.*) *Kuntze*
Viola palmata *L.*
V. pap. domestica (*Bickn.*) *Pall.*
V. arenaria *DC.*
V. rostrata *Pursh*
Woodsia ilvensis (*L.*) *R. Br.*
Xanthium canadense *Mill.*
X. echinatum *Murr.*
Xyris caroliniana *Walt.*
Polypodium vulgare *L.*
Dicranum schraderi *W. & M.*
Hypnum oakesii *Sulliv.*
H. pratense *Koch*
H. deplanatum *Schp.*
Brachythecium starkii *Brid.*
B. salebrosum (*Hoffm.*)
Porella platyphylla *Lindb.*
Anthoceros laevis *L.*
Amanita flavoconia *Atk.*
A. caesarea *Scop.*
A. onusta *Howe*
Amanitopsis strangulata *Fr.*
A. volvata (*Pk.*) *Sacc.*
A. farinosa (*Schw.*)
Armillaria mellea *Vahl*
Tricholoma vaccinum (*Pers.*) *Fr.*
T. imbricatum *Fr.*
T. equestre *L.*
T. subacutum *Pk.*
T. silvaticum *Pk.*
Clitocybe dealbata *Sow.*
C. tortilis (*Bolt.*) *Fr.*
C. amethystina (*Bolt.*) *Fr.*
Collybia platyphylla *Fr.*
C. familia *Pk.*
C. uniformis *Pk.*
C. acervata *Fr.*
Mycena subincarnata *Pk.*
M. clavicularis *Fr.*
M. pterigena *Fr.*
Omphalia campanella (*Batsch*) *Fr.*
O. umbellifera *L.*

Hygrophorus pudorinus *Fr.*
H. splendens *Pk.*
H. capreolarius *Kalchb.*
H. pratensis (*Pers.*) *Fr.*
H. nitidus *B. & C.*
H. peckii *Atk.*
Lactarius volemus *Fr.*
L. subdulcis *Fr.*
L. cinereus *Pk.*
L. griseus *Pk.*
L. parvus *Pk.*
Russula foetens (*Pers.*) *Fr.*
R. granulata *Pk.*
R. crustosa *Pk.*
R. varians *Banning*
R. olivascens *Fr.*
R. rugulosa *Pk.*
R. simillima *Pk.*
Cantharellus cibarius *Fr.*
C. minor *Pk.*
C. cinnabarinus *Schw.*
C. cinereus *Fr.*
C. infundibuliformis (*Scop.*)
Marasmius subnudus *Pk.*
M. polyphyllus *Pk.*
M. filopes *Pk.*
Lenzites sepiaria *Fr.*
Pholiota vermiflua *Pk.*
P. togularis (*Bull.*) *Fr.*
P. squarrosoides *Pk.*
P. confragosa *Fr.*
Cortinarius rimosus *Pk.*
C. berlesianus *S. & C.*
Inocybe geophylla *Sow.*
Stropharia depilata (*Pers.*) *Fr.*
S. johnsoniana *Pk.*
Hypholoma subaquilum *Banning*
Coprinus micaceus *Fr.*
Boletus auriporus *Pk.*
B. clintonianus *Pk.*
Polyporus sulphureus (*Bull.*) *Fr.*
P. resinosus (*Schrad.*) *Fr.*
P. benzoinus (*Wahl.*) *Fr.*
P. caesius (*Schrad.*) *Fr.*
Trametes variiformis *Pk.*
T. serialis *Fr.*
Fomes pinicola *Fr.*
F. fomentarius (L.) *Fr.*
F. roseus *A. & S.*
Polystictus abietinus *Fr.*
Daedalea quercina (*L.*) *Pers.*
D. unicolor (*Bull.*) *Fr.*
Merulius tenuis *Pk.*
M. fugax *Fr.*
M. niveus *Fr.*
Phlebia radiata *Fr.*
Hydnum imbricatum *L.*
H. repandum *L.*
H. albidum *Pk.*
H. caput-ursi *Fr.*
Radulum orbiculare *Fr.*
Odontia lateritia *B. & C.*
Tremellodon gelatinosum (*Scop.*) *Pers.*
Craterellus cornucopioides (*L.*) *Pers.*
Clavaria botrytis *Pers.*
C. cristata *Pers.*
C. stricta *Pers.*
C. muscoides *L*
C. ligula *Fr.*
C. argillacea *Fr.*
C. tsugina *Pk.*
Calocera cornea *Fr.*
Lycoperdon gemmatum *Batsch*
L. subincarnatum *Pk.*
Granularia pulvinata (*Schw.*) *White*
Didymium melanospermum (*Pers.*) *Mach.*
Leocarpus fragilis (*Dicks.*) *R.*
Trichia favoginea (*Batsch*) *Pers.*
Hemitrichia clavata (*Pers.*) *R.*
Ustilago zeae (*Beckm.*) *Ung.*
Puccinia podophylli *Schw.*
Urocystis anemones (*Pers.*)
Gymnosporangium clavipes *C. & P.*
Septoria ludwigiae *Cke.*
Glomerularia corni *Pk.*
Botrytis vulgaris *Fr.*
Helvella macropus (*Pers.*) *Karst.*
Geoglossum ophioglossoides (*L.*) *Sacc.*
Mitrula vit. irregularis (*Pk.*) *Sacc.*
Leotia lubrica (*Scop.*) *Pers.*
Cudonia circinans (*Pers.*) *Fr.*
C. lutea (*Pk.*) *Sacc.*
Dasyscypha agassizii (*B. & C.*) *Sacc.*
Lachnea scutellata (*L.*) *Sow.*
L. scubalonta *C. & G.*
Sarcoscypha floccosa *Schw.*
Pezicula carpinea (*Pers.*) *Tul.*

Pezicula acericola *Pk.*
Exoascus confusus *Atk.*
Sphaerotheca humuli (*DC.*) *Burr.*
Hypomyces lactifluorum *Schw.*
Xylaria digitata (*L.*) *Grev.*
Colpoma morbidum (*Pk.*) *Sacc.*

B

CONTRIBUTORS AND THEIR CONTRIBUTIONS

Mrs A. M. Smith and Mrs C. W. Harris, Brooklyn

Amblystegium fluitans *De N.*
A. riparium *B. & S.*
Amphoridium lapponicum *Schp.*
Anomodon apiculatus *B. & S.*
A. attenuatus *Huebn.*
A. obtusifolius *B. & S.*
A. rostratus *Schp.*
Aulacomnion palustre *Schwaegr.*
Barbula caespitosa *Schwaegr.*
B. convoluta *Hedw.*
Bartramia oederiana *Swartz*
B. pomiformis *Hedw.*
Brachythecium acuminatum *Bv.*
B. laetum *Brid.*
B. populeum *B. & S.*
B. rivulare *B. & S.*
B. salebrosum *B. & S.*
B. starkii *Brid.*
B. velutinum *B. & S.*
Bryum bimum *Schreb.*
B. caespiticium *L.*
B. capillare *L.*
B. nutans *Schreb.*
B. roseum *L.*
B. torquescens *B. & S.*
Buxbaumia aphylla *L.*
Catherinea undulata *Bv.*
Ceratodon purpureus *Brid.*
Climacium dendroides *W. & M.*
Cylindrothecium cladorrhizans *Schp.*
Dicranum flagellare *Hedw.*
D. montanum *Hedw.*
D. longifolium *Hedw.*
D. schraderi *W. & M.*
D. viride *Schp.*
D. drummondi *Muell.*
Diphyscium foliosum *Mohr.*
Encalypta rhabdocarpa *Schwaegr.*
E. streptocarpa *Hedw.*
Fissidens adiantoides *Hedw.*
Fontinalis biformis *Sulliv.*
F. lescurii *Sullv.*
Funaria hygrometrica *Sibth.*
Georgia pellucida *Rabenh.*
Grimmia apocarpa *Hedw.*
G. leucophaea *Grev.*
Gymnostomum rupestre *Schwaegr.*
Hedwigia ciliata *Ehrh.*
Hylocomium brevirostre *B. & S.*
H. squarrosum *B. & S.*
H. triquetrum *B. & S.*
Homalia jamesii *B. & S.*
H. trichomanoides *B. & S.*
Hypnum chrysophyllum *Brid.*
H. cordifolium *Hedw.*
H. cuspidatum *L.*
H. deplanatum *Schp.*
H. fertile *Sendt.*
H. haldanianum *Grev.*
H. hispidulum *Brid.*
H. imponens *Hedw.*
H. lindbergii *Limpt.*
H. recurvans *Schwaegr.*
H. rusciforme *B. & S.*
H. schreberi *Willd.*
H. serrulatum *Hedw.*
H. splendens *Hedw.*
H. stellatum *Schreb.*
H. strigosum *Hoffm.*
H. uncinatum *Hedw.*
Leptobryum pyriforme *Schp.*
Leucobryum glaucum *Schp.*
Leucodon julaceus *Sullv.*
Myurella careyana *Sullv.*
Mnium affine *Bland.*
M. cuspidatum *Hedw.*
M. drummondi *B. & S.*
M. medium *B. & S.*
M. orthorrhynchum *B. & S.*
M. punctatum *Hedw.*
M. rostratum *Schp.*
M. serratum *Brid.*
M. spinulosum *B. & S.*
M. stellare *Hedw.*

Neckera oligocarpa *B. & S.*
N. pennata *Hedw.*
Oncophorus wahlenbergii *Brid.*
Orthotrichum fallax *Schp.*
O. anomalum *Hedw.*
Porotrichum alleghaniense *Grout*
Philonotis fontana *Brid.*
P. muhlenbergii *Brid.*
Pottia riparia *Aust.*
Plagiothecium denticulatum *B. & S.*
P. elegans *Schp.*
P. pulchellum *B. & S.*
P. striatellum *Lindb.*
Pogonatum alpinum *Roehl.*
P. tenue *E. G. Britton*
Racomitrium heterostichum *Brid.*
R. microcarpum *Brid.*
Rhabdoweisia denticulata *B. & S.*
Seligeria doniana *C. Muell.*
Sphagnum acutifolium *Ehrh.*
S. cuspidatum *Ehrh.*
S. quinquefarium *Warnst*
S. squarrosum *Pers.*
Tortula caespitosa *H. & G.*
T. tortuosa *Ehrh.*
Thuidium delicatulum *Mitt.*
T. recognitum *Lindb.*
T. paludosum *R. & H.*
Anthoceros laevis *L.*
Asterella hemisphaerica *Bv.*
Bazzania trilobata *S. F. Gray*
Blepharistoma trichophylla *Dumort.*
Cephalozia curvifolia *Dumort.*
C. multiflora *Spruce*
Conocephalus conicus *Dumort.*
Frullania asagrayana *Mont.*
Geocalyx graveolens *Nees*
Jungermannia barbata *Schreb.*
Kantia trichomanis *S. F. Gray*
Liochlaena lanceolata *Nees*
Lejeunea serpyllifolia *Libert*
Porella platyphylla *Lindb.*
Ptilidium ciliare *Nees*
Scapania nemorosa *Dumort.*
Trichocolea tomentella *Dumort.*

Mrs E. G. Britton, New York

Dicranella heteromalla *Schp.*
Dicranum longifolium *Hedw.*
D. fuscescens *Turn.*
Dicranodontium longirostre *B. & S.*
Weissia ulophylla *Ehrh.*
W. americana *Lindb.*
Didymodon cylindricarpus *B. & S.*
Georgia pellucida *Rabenh.*
Tortula ruralis *Ehrh.*
Mnium affine *Bland.*
M. spinulosum *B. & S.*
Ulota crispa *Brid.*
Aulacomnion heterostichum *B. & S.*
Polytrichum juniperinum *Willd.*
Fontinalis dalecarlica *B. & S.*
Anomodon rostratus *Schp.*
A. viticulosus *H. & T.*
Webera proligera (*Lindb.*)
Drummondia clavellata *Hook.*
Bryum nutans *Schreb.*
B. concinnatum *Spruce*
Pylaisaea velutina *B. & S.*
Raphidostegium recurvans *Schwaegr.*
R. jamesii *Lesq.*
R. laxepatulum *L. & J.*
Plagiothecium denticulatum *B. & S.*
P. mullerianum *Schp.*
P. striatellum *Lindb.*
Hypnum fertile *Sendt.*
H. splendens *Hedw.*
H. umbratum *Ehrh.*
H. oakesii *Sulliv.*
H. crista-castrensis *L.*
H. pratense *Koch*
Pogonatum alpinum *Roehl*
Typhula muscicola *Fr.*

Miss H. C. Anderson, Lambertville N. J.

Agaricus abruptus *Pk.*
Armillaria mellea *Vahl*
Cantharellus cibarius *Fr.*
Hydnum cyaneotinctum *Pk.*
Panus strigosus *B. & C.*
Strobilomyces strobilaceus (*Scop.*)

Miss M. L. Overacker, Syracuse

Hepatica acuta (*Pursh*) *Britton*
Viola selkirkii *Pursh*
V. renifolia *Gray*
Claytonia virginica *L.*
C. caroliniana *Mx.*
Asclepias exaltata *Muhl.*
Ribes prostratum *L'Her.*
R. lacustre *Poir.*
Tiarella cordifolia *L.*
Trillium grandiflorum (*Mx.*) *Salisb.*
Polymnia can. radiata *Gray*
Lycoperdon gemmatum *Batsch*

Miss V. S. White, New York

Tricholoma fallax *Pk.*
Clitocybe marginata *Pk.*
Russula adusta *Fr.*
R. sordida *Pk.*
R. basifurcata *Pk.*
R. purpurina *Q. & S.*
R. fingibilis *Britz.*
Marasmius viticola *B. & C.*
Leptonia serrulata (*Pers.*) *Fr.*
Flammula granulosa *Pk.*
Galera lateritia *Fr.*
Boletus scabripes *Pk.*
B. purp. fumosus *Pk.*
Polyporus confluens (*A. & S.*) *Fr.*
P. carpineus *Sow.*

Miss Emma S. Thomas, Schoharie

Daedalea unicolor *Fr.*
Taraxacum taraxacum (*L.*) *Karst.*
Calvatia maxima (*Schaeff.*) *Morg.*

Miss Flora Zimmeister, Syracuse

Geaster triplex *Jungh.*

Mrs A. C. Shanks, Round Lake

Polypodium vulgare *L.*

Mrs F. B. Brandreth, Ossining

Polyporus umbellatus *Fr.*

Mrs R. C. Anthony, Gouverneur

Secotium warnei *Pk.*
Cystopus tragopogonis (*Pers.*) *Schrot*

Miss Edith Wilkinson, Tannersville

Pluteus cervinus albipes *Pk.*

F. E. Fenno, Nichols

Crataegus tomentosa *L.*
Potentilla pumila *Poir.*
Taraxacum erythrospermum *Andrz.*
Ilysanthus gratioloides (*L.*) *Benth.*
Blephilia hirsuta (*Pursh*) *Torr.*
Polygonum hartwrightii *Gray*
Salsola tragus *L.*
Juncus pelocarpus *E. Meyer*
Agrostis stolonifera *L.*
Panicum lanuginosum *Ell.*

F. S. Earle, New York

Amanitopsis volvata (*Pk.*) *Sacc.*
Clitocybe tort. gracilis *Pk.*
Russula earlei *Pk.*
Hypholoma incertum *Pk.*
Stropharia sicc. radicata *Pk.*

G. F. Atkinson, Ithaca

Tricholoma acre *Pk.*
Hygrophorus peckii *Atk.*
Merulius tenuis *Pk.*
Cudonia circinans (*Pers.*) *Fr.*
Clavaria muscoides *L.*
C. pinophila *Pk.*
Helvella ambigua *Karst.*
H. elastica *Bull.*

S. Sherwood, Delhi

Agaricus placomyces *Pk.*

D. Griffiths, Takoma Park, D. C.

Ustilago aristidae *Pk.*

H. C. Magnus, Albany

Penicillium digitatum (*Fr.*) *Sacc.*

B. L. Robinson, Cambridge, Mass.

Acalypha gracilescens *Gray*
Acer rubrum *L.*
Amianthum muscaetoxicum *Gray*
Antennaria brainerdii *Fern.*
A. canadensis *Greene*
A. fallax *Greene*
A. neglecta *Greene*
A. neodioica *Greene*
A. parlinii *Fern.*
A. parl. arnoglossa *Fern.*
A. petaloidea *Fern.*
A. plantaginea *R. Br.*
A. rupicola *Fern.*
Anthoxanthum odoratum *L.*
Arenaria serpyllifolia *L.*
Aristida dichotoma *Mx.*
Aspidium crist. x marginale *Daven.*
Asplenium viride *Huds.*
Aster divaricatus *L.*
A. glomeratus *Bernh.*
A. herveyi *Gray*
A. junceus *Ait.*
A. linariifolius *L.*
A. long. villicaulis *Gray*
A. polyphyllus *Willd.*
A. schreberi *Nees*
A. subulatus *Mx.*
A. lind. comatus *Fern.*
Atriplex arenaria *Nutt.*
Bidens bipinnata *L.*
B. discoidea *Britton*
B. trichosperma *Britton*
Botrychium matricariaefolium *Braun*
B. virginianum *Sw.*
Carex albicans *Willd.*
Carex arctata *Boott*
C. backii *Boott*
C. capillaris *L.*
C. castanea *Wahl.*
C. cephalophora *Muhl.*
C. chordorrhiza *Ehrh.*
C. crawfordii *Fern.*
C. cristata *Schw.*
C. deflexa *Hornem.*
C. eburnea *Boott*
C. exilis *Dew.*
C. fernaldii *Bail.*
C. fusca *All.*
C. gynocrates *Wormsk.*
C. interior *Bail.*
C. intumescens *Rudge*
C. laxiflora *Lam.*
C. lenticularis *Mx*
C. livida *Willd.*
C. longirostris *Torr.*
C. lurida *Wahl.*
C. oligosperma *Mx.*
C. pedunculata *Muhl.*
C. pilulifera *L.*
C. prasina *Wahl.*
C. pubescens *Muhl.*
C. scorsa *Howe*
C. stipata *Muhl.*
C. tenella *Schk.*
C. teret. ramosa *Boott*
C. tetan. woodii *Bail.*
C. tener. richii *Fern.*
C. umbel. tonsa *Fern.*
C. umbel. brevirostris *Boott*
C. vaginata *Tausch*

Carex varia *Muhl.*
C. vesicaria *L.*
Campanula americana *L.*
Chrysopsis falcata *Ell.*
Clitoria mariana *L.*
Crataegus punctata *Jacq.*
Cyperus nuttallii *Torr.*
C. diandrus *Torr.*
Discopleura capillacea *DC.*
Direa palustris *L.*
Desmodium acuminatum *DC.*
Elatine americana Arn.
Eleocharis ovata *R. Br.*
E. intermedia *Schultes*
E. palustris *R. Br.*
Elymus striatus *Willd.*
E. virginianus *L.*
Epilobium hornemanni *Reich.*
Eriocaulon decangulare *L.*
Eriophorum alpinum *L.*
Equisetum variegatum *Schleich.*
Eupatorium hyssopifolium *L.*
Euphorbia polygonifolia *L.*
Euphrasia amer. canadensis *Robins.*
E. oakesii *Wett.*
E. williamsii *Robins.*
Frimbristylis capillaris *Gray*
Festuca elatior *L.*
F. nutans *Willd.*
Galium latifolium *Mx.*
Geum ciliatum *Pursh*
Gerardia skinneriana *Wood*
Gratiola aurea *Muhl.*
Hemicarpha subsquarrosa *Nees*
Heuchera villosa *Mx.*
Halenia deflexa *Griseb.*
Hypericum nudicaule *Walt.*
Iris virginica *L.*
Juncus brachycephalus *Buch.*
J. dudleyi *Wieg.*
J. nodosus *L.*
J. ten. williamsii *Fern.*
J. subtilis *Meyer*
Krigia virginica *Willd.*
Lobelia kalmii *L.*
Luzula vernalis *DC.*
Lycopodium clav. monostachyon *G. & H.*
L. obscurum *L.*
L. sabinaefolium *Willd.*
Lycopodium? sitchense *Rup.*
L. tristachyum *Pursh*
Lycopus sessilifolius *Gray*
Lespedeza capitata *Mx.*
Muhlenbergia willdenovii *Trin.*
Oryzopsis asperifolia *Mx.*
Panicum pauciflorum *Gray*
Paronychia argyrocoma *Nutt.*
Pedicularis furbishiae *Wats.*
Pentstemon pubescens *Soland.*
Pinus contorta *Dougl.*
Pluchea camphorata *DC.*
Podostemon ceratophyllus *Mx.*
Polygala nuttallii *T. & G.*
Poa compressa *L.*
P. pratensis *L.*
P. serotina *Ehrh.*
Polygonum acre *H. B. K.*
P. maritimum *L.*
P. ram. atlanticum *Robins.*
P. viviparum *L.*
Polygonella articulata *Meisn.*
Potamogeton het. graminifolius *W. & C.*
P. lucens *L.*
P. pectinatus *L.*
P. robbinsii *Oakes*
P. vaseyi *Robbins*
P. zosteraefolius *Schum.*
Potentilla canadensis *L.*
P. norvegica *L.*
Pyrus arbutifolia *L.*
Quercus prinoides *Willd.*
Q. ilicifolia *Wang.*
Ranunculus fascicularis *Muhl.*
R. repens *L.*
R. septentrionalis *Poir.*
Rhynchospora capillacea *DC.*
Rosa nitida *Willd.*
Rotala ramosior *Koehne*
Rubus arg. randii *Bail.*
Ruppia maritima *L.*
Sabbatia stellaris *Pursh*
Salicornie mucronata *Bigel.*
Salix balsamifera *Barratt*
Salsola kali *L.*
Sanguisorba canadensis *L.*
Saxifraga leucanthemifolia *Mx.*
S. virginiensis *Mx.*
Senecio obovatus *Muhl.*
Scirpus atrocinctus *Fern.*

Scirpus caespitosus *L.*
S. deb. williamsii *Fern.*
S. pauciflorus *Light.*
S. peckii *Britton*
Sibbaldia procumbens *L.*
Silene antirrhina *L.*
Solidago humilis *Pursh*
Spartina juncea *Willd.*
Sporobolus aspericaulis *Scrib.*
Trifolium hybridum *L.*
Vaccinium corymbosum *L.*
Veronica serp. borealis *Laest.*
Vicia sativa *L.*
Viola arenaria *DC.*

Ralph E. Matteson, Grand Rapids Mich.

Polyporus obtusus *Berk.*
Irpex crassus *B. & C.*

N. L. Britton, New York

Rhexia aristosa *Britton*

C. E. Clark, Newark

Clitocybe dealbata deformata *Pk.*

J. M. Clarke, Albany

Clitocybe illudens *Schw.*

F. S. Boughton, Pittsford

Polyporus squamosus (*Huds.*) *Fr.*

W. R. Griffiths, Douglaston

Eucalyptus calophylla *R. Br.*
Schinus molle *L.*
Arbutus menziesii *Pursh*

F. J. Braendle, Washington D. C.

Clitocybe morbifera *Pk.*
Tylostoma punctatum *Pk.*
Stropharia siccipes *Karst.*
Panaeolus epimyces *Pk.*

A. M. Baker, Coeymans

Pholiota vermiflua *Pk.*

N. M. Glatfelter, St Louis Mo.

Bolbitius glatfelteri *Pk.*
Gyromitra brunnea *Underw.*
Polyporus giganteus (*Pers.*) *Fr*

C. J. Elting, Highland

Arisaema pusillum (*Pk.*) *Nash*
Hypholoma incertum *Pk.*

E. J. Durand, Ithaca

Geopyxis carbonaria *A. & S.*
Peziza violacea *Pers.*
P. fusicarpa *Ger.*
Detonia fulgens (*Pers.*) *Rehm*
Calloria caulophylli (*E. & E.*) *Rehm*
Lachnum aquilinum (*Karst.*) *Schroet.*
Sclerotinia smilacinae *Durand*
Cibaria sulphurella (*E. & E.*) *Rehm*
C. americana *Durand*
Ascobolus atrofuscus *P. & P.*
Caldesia sabinae (*Dell.*) *Rehm*

J. E. S. Heath, Waterloo Ia.

Scleroderma vulgare *Fr.*
Calvatia craniiformis (*Schw.*) *Mory.*
Geaster mammosus *Chev.*

D. R. Sumstine, Kittanning Pa.

Lactarius sumstinei *Pk.*
Boletus parasiticus *Bull.*
Russula earlei *Pk.*

W. P. Judson, Albany

Lilium canadense *L.*

C. S. Sargent, Jamaica Plain Mass.

Populus nigra elegans *Bail.*

A. R. Sweetser, Eugene Ore.

Sparassis herbstii *Pk.*

P. M. Van Epps, Glenville

Chlorosplenium aeruginosum (*Oeder*) *DcN.*

M. S. Baxter, Rochester

Buxbaumia indusiata *Brid.*

H. P. Burt, New Bedford Mass.

Agaricus placomyces *Pk.*

R. M. Freeman, Minneapolis Minn.

Entoloma graveolens *Pk.*
Polyporus obtusus *Berk.*

J. C. Arthur, Lafayette Ind.

Aecidium euphorbiae *Schw.*
Puccinia xanthii *Schw.*

B. B. Mackintosh, Peabody Mass.

Lepiota rhacodes *Vitt.*
Agaricus pusillus *Pk.*
Lepiota cristata *A. & S.*

B. C. Williams, Newark

Clitocybe multiceps *Pk.*
Clitocybe dealb. deformata *Pk.*

F. C. Stewart, Geneva

Gloeosporium phaeosorum *Sacc.*
Sporotrichum poae *Pk.*

A. P. Saunders, Clinton

Morchella angusticeps gracilis *Pk.*

S. E. Jelliffe, New York

Thamnidium elegans *Lk.*

E. B. Sterling, Trenton N. J.

Agaricus tabularis *Pk.*
A. haemorrhoidarius *Schulz.*
Coprinus comatus *Fr.*
C. atramentarius *Bull.*
Phallus imperialis *Schulz.*
Necotium warnei *Pk.*
Catastoma circumscissum *B. & C.*
Calvatia pachyderma *Pk.*

Charles McIlvaine, Cambridge Md.

Merulius lacrymans (*Jacq.*) *Fr.*

G. B. Fessenden, Boston Mass.

Cortinarius intrusus *Pk.*

G. B. Morris, Waltham Mass.

Cortinarius squamulosus *Pk.*
Boletus spectabilis *Pk.*
Coprinus silvaticus *Pk.*
Boletinus paluster *Pk.*

J. G. Jack, Jamaica Plain Mass.

Crataegus acutiloba *Sarg.*
C. anomala *Sarg.*
C. coccineoides *Ashe*
C. collina *Chapm.*
C. canadensis *Sarg.*
C. champlainensis *Sarg.*
C. densiflora *Sarg.*
C. dilatata *Sarg.*
C. ellwangeriana *Sarg.*
C. fecunda *Sarg.*
C. flabellata (*Spach*) *Rydb.*
C. holmesiana *Ashe*
C. illinoiensis *Ashe*
C. integriloba *Sarg.*
C. intricata *Lange*
C. jonesae *Sarg.*
Crataegus laurentiana *Sarg.*
C. lucorum *Sarg.*
C. macracantha *Lodd.*
C. mollis (*T. & G.*) *Scheele*
C. peoriensis *Sarg.*
C. pedicellata *Sarg.*
C. pastorum *Sarg.*
C. praecox *Sarg.*
C. pruinosa *Wend.*
C. rotundifolia (*Ehrh.*)
C. scabrida *Sarg.*
C. submollis *Sarg.*
C. succulenta *Lk.*
C. suborbiculata *Sarg.*
C. venusta *Beadle*

R. A. Harper, Madison Wis.

Pluteus patricius *Schulz.*
P. cervinus (*Schaeff.*) *Fr.*
Irpex fuscoviolaceus *Fr.*
Polyporus aurantiacus *Pk.*
Gyromitra sphaerospora (*Pk.*) *Sacc.*
Peziza amplispora *C. & P.*
Puccinia mesomegala *B. & C.*
Septoria sallisae *Ger.*

W. L. Smith, Albany

Macrosporium lagenariae *Thum.*

C. M. C. Lloyd, Gloversville

A specimen of "six-leaved" clover

New York State Agric. Society

Miscellaneous collection of dried plants, 398 numbers

C

SPECIES NOT BEFORE REPORTED

Delphinium ajacis L.

Near Niagara Falls. August. E. M. Wilcox. This is an introduced plant, which is cultivated for its flowers, but it sometimes escapes from cultivation. It resembles the closely allied D. consolida, from which it may be distinguished by its pubescent seed vessels.

Hypericum boreale (Britton) Bickn.

Shore of Piseco lake. August. Closely related to the common H. mutilum but separable from it by the stem, which is scarcely branched, except at the top, by the small bracts of the cymes being similar in shape to the leaves and specially by the seed vessels, which are decidedly longer than the sepals.

Vicia angustifolia Roth

Adams, Jefferson co. June. This is closely related to V. sativa, the common vetch, as a variety of which it is recorded in 46th Museum report, p.122. It is now considered a valid species and may be separated from its near relative by its more narrow linear or oblong, pointed leaflets.

Kneiffia longipedicellata Small

Sandy soil near Eastport, Suffolk co. August. A peculiar form having a flexuous much branched stem and leaves a little broader than in the typical form. A specimen collected near Quogue more nearly represents the typical form. The large flower and long peduncle are distinguishing characters of the species.

Lactuca virosa L.

This introduced plant is rapidly spreading and is already found growing freely in waste places about many of our cities and villages. It was formerly confused with L. scariola, a species which it closely resembles and which may be distinguished by its lower leaves being sinuate or sinuate pinnatifid and by its pale achenes. Specimens of this species were collected near Trenton Falls in August.

Hypochaeris radicata L.

Fields and roadsides. Cedarhurst, Nassau co. June. G. D. Hulst. Introduced. It has also been reported from Richmond county.

Artemisia stelleriana Bess.

Seabeach. Rockaway L. I. July. G. D. Hulst. The beach wormwood is very distinct from our other species of this genus and may easily be recognized by its dense, whitish coat of tomentum and its large, erect and crowded heads of flowers.

Xanthium commune Britton

Moist ground. Whitehall. September. In our specimens the hairs on the lower half of the beaks and prickles of the burs are whitish, instead of brown.

Aster roscidus Burgess

Roadside. Piseco, Hamilton co. August. A beautiful aster related to the large leaved aster, A. macrophyllus, but easily distinguished by the abundance of the glands on the upper part of the stem and also on the leaves.

Matricaria matricarioides (Less.) Porter

Waste places and roadsides. Lansingburg. June. This introduced plant is easily separated from our other species of the genus by the absence of ray flowers. In size and foliage it resembles the common mayweed, Anthemis cotula.

Antennaria fallax Greene

Bushy places, groves and borders of woods. Menands and Westport. May.

Antennaria ambigens (Greene) Fern.

Roadsides. Sandlake, Rensselaer co. May. Related to the preceding species but separable from it by its shorter stem, broader and closer stem leaves, which are glandular on the upper surface, and by the glandular, purplish hairs of the stolens.

Antennaria brainerdii Fern.

Pastures and shaded banks. Westport and Keene, Essex co. May. Related to A. neodioica, from which it may be sepa-

rated by the purple hairs of the stem, though these are sometimes few and scattered and easily overlooked. The plants of the Keene locality grew on a moist, partly shaded bank near the Willey house and are larger than the others.

Antennaria petaloidea Fern.

In a recent clearing. North Elba, Essex co. June.

Plantago halophila Bickn.

Sandy soil near Eastport, Suffolk co. and near Saranac lake, Franklin co. September. This plantain has generally been considered a form of P. major, but it may be distinguished by its pubescence, its smaller, thicker leaves with petioles shorter than the blades and by its curved scapes.

Lycopus communis Bickn.

Near Port Jefferson, Suffolk co., and in the Adirondack region. This is closely related to L. virginicus, with which it has been confused and from which it may be separated by the tuberous base of the stem.

Arisaema pusillum (Pk.) Nash

Fine specimens of this plant, which was formerly considered a variety of A. triphyllum, were found near Highland, Ulster co., in June, by C. J. Elting and contributed by him to the herbarium.

Limnorchis media Rydb.

Swamps and wet places near Jordanville, Herkimer co. July. This and the next species were formerly thought to be forms of Habenaria hyperborea, which they closely resemble. State Museum report 50, 1:126.

Limnorchis huronensis (Nutt.) Rydb.

Wet places and swampy ground about Jordanville. July. Also in Petersburg, Rensselaer co. A much smaller plant than the preceding. L. dilatata linearifolia Rydb. is represented in the herbarium by a specimen collected many years ago by Rev J. A. Paine near Hidden lake, Herkimer county.

Carex crawfordii Fern.

This sedge, which has long been known as C. scoparia var. minor, is common in wet places in the eastern and northern parts of the State. It has been raised to specific rank and given a new name by Mr Fernald.

Botrychium matricariae (Schrank) Spreng.

South Corinth, Saratoga co. August.

Pottia riparia Aust.

Limestone rocks. Near Chilson lake, Essex co. July. Sterile. Mrs A. M. Smith and Mrs C. W. Harris. This is a very small moss and one that is easily overlooked. It is rarely fertile.

Tortula ruralis Ehrh.

Limestone rocks. Green lake near Jamesville, Onondaga co. July. Mrs E. G. Britton. The specimens are without fruit.

Racomitrium heterostichum Brid.

Eagle rock gorge near Chilson lake. June. Mrs Smith and Mrs Harris. This is variety gracilescens, a slender moss, and these specimens are without fruit.

Encalypta rhabdocarpa Schwaegr.

Near Chilson lake. June. In fruiting condition. Mrs Smith and Mrs. Harris.

Hypnum lindbergii Limpt.

Regina swamp and Pyramid lake, near Chilson lake. September. Mrs Smith and Mrs Harris.

Lichlaena lanceolata Nees

Regina swamp near Chilson lake, growing on decaying wood. June. Mrs Smith and Mrs Harris. The specimens are fertile and in fine condition.

Amanita flavoconia Atk.

Woods and thickets. Adirondack mountains. July and August. Closely resembling A. frostiana in size and color but distinguishable by the even margin of the pileus, the floccose edge of the lamellae and the fragile character of the volva, which

easily separates from the slightly bulbous base of the stem and adheres to the soil that surrounds it. Both it and the annulus are of a beautiful, chrome yellow color.

Tricholoma radicatum n. sp.

PLATE 82, FIG. 15–19

Pileus fleshy, firm, umbraculiform or broadly convex, dry, minutely silky fibrillose or obscurely fibrillose squamulose, somewhat shining, pale grayish brown, the center usually darker and often tinged with reddish brown, the margin thin, cuticle separable, flesh white, taste disagreeable; lamellae thin, close, emarginate, adnexed, having a decurrent tooth, white; stem firm, nearly equal, hollow with a small cavity, slightly fibrillose, distinctly radicating, white; spores broadly elliptic, .0002–.00024 of an inch long, .00016–.0002 broad.

Pileus 2–3 inches broad; stem 1.5–4 inches long, 3–5 lines thick. Under coniferous trees. North Elba. September.

This mushroom loses its unpleasant flavor in cooking and is edible. A more full and popular description is given in another part of the report.

Clitocybe inversa (Scop.) Fr.

Pine groves. Near Northville, Fulton co. August. A stout form with a thick stem.

Mycena rugosoides n. sp.

PLATE M, FIG. 17–34

Pileus fleshy but thin, campanulate, usually broadly umbonate, glabrous, hygrophanous, even but striate on the margin when moist, paler and uneven when dry, with close irregular radiating rugae, variable in color; lamellae subdistant, rounded or emarginate next the stem, adnexed, whitish or smoky white; stem long, even, glabrous, hollow, radicating, villose tomentose at the base, white or pallid, often tinged with reddish brown at the base; spores elliptic, .0003 of an inch long, .0002 broad, granular.

Pileus 6–12 lines broad; stem 1.5–3 inches long, .5–1.5 lines thick. Gregarious on much decayed, mossy, prostrate trunks of coniferous trees. North Elba. September.

Three forms occur which are separable by color. One is wholly white, another has the pileus and stem cinereous or grayish

brown and the lamellae white, the third has the pileus blackish brown, the stem pallid or grayish brown and the lamellae smoky white. Reddish stains sometimes occur on any part of the plant. These are possibly due to insect injury. The umbo is often very obtuse or almost flat at the top. This species is separated from M. rugosa by its moist umbonate pileus, its long stem, its straight, not oblique, rooting base and by its habitat. The villosity at the base of the stem is grayish white.

Hygrophorus subrufescens n. sp.

PLATE M, FIG. 1-6

Pileus fleshy, but thin on the margin, convex or nearly plane, dry, minutely floccose squamulose, pale pink or grayish red, flesh whitish, faintly tinged with pink, taste mild; lamellae subdistant, decurrent, whitish; stem rather long, equal or nearly so, flexuous, glabrous, solid, white; spores elliptic, .0003 of an inch long, .0002 broad.

Pileus about 1 inch broad; stem 1.5–3 inches long, 2–4 lines thick. Among fallen leaves in woods. Port Jefferson, Suffolk co. August.

This species belongs to the section Camarophyllus, and is related to H. leporinus, from which it may be separated by its different color, thinner margin of the pileus and glabrous stem.

Hygrophorus peckii Atk.

Woods, pastures and bushy places. July and August. Ithaca. G. F. Atkinson. Gansevoort, Saratoga co., Westport, Essex co. and Piseco, Hamilton co. It is most closely related to H. psittacinus, from which it is separated by its odor and decurrent lamellae.

Lactarius luteolus Pk.

PLATE 83, FIG. 7-11

Among fallen leaves in woods. Port Jefferson. August. A very distinct species, easily known by its mild taste, copious milk, changing from white to brown on exposure to the air, and by the somewhat viscid pubescence of the pileus and stem. Milk flows readily from any part of the plant on the slightest injury, and wounds assume a dark brown color. The plant is edible; and is more fully described in another part of this report.

Russula magnifica n. sp.

PLATE N, FIG. 1–4

Pileus fleshy, firm, convex and umbilicate when young, centrally depressed or infundibuliform when mature, glabrous, viscid when young and moist, even, but the cuticle sometimes rimose squamose in the center, even on the margin, the thin pellicle subseparable, flesh white or whitish, odor and taste alkaline, strong and disagreeable; lamellae narrow, crowded, unequal, adnate or slightly decurrent, whitish with a faint pinkish reflection, becoming reddish brown where bruised and rusty brown when old; stem equal or narrowed downward, solid, becoming spongy or sometimes cavernous within when old, white; spores white, even or nearly so, subglobose, .0003–.0004 of an inch long, .00025–.0003 broad.

Pileus 4–10 inches broad; stem 2–5 inches long, 8–18 lines thick. Among fallen leaves in woods. Port Jefferson. August.

This is the largest species of Russula known to me. It is related to R. delica and R. brevipes, from which its large size, peculiar odor and viscid pileus separate it. Sometimes the surface of the pileus is irregularly spotted with small unequal depressions or cavities. The odor persists in the dried specimens.

Russula earlei n. sp.

PLATE N, FIG. 5–10

Pileus fleshy, firm, hemispheric, becoming broadly convex or nearly plane, sometimes centrally depressed, glabrous, very viscid, the margin even when young but sometimes rimose and uneven when old, stramineous, becoming paler with age, flesh whitish or yellowish, taste mild; lamellae thick, distant, adnate, with a few intermediate short ones near the margin, whitish becoming yellowish; stem short, firm, equal or nearly so, solid, becoming spongy within, white; spores white, subglobose, .0002–.00024 of an inch broad.

Pileus 1.5–2.5 inches broad; stem 1–1.5 inches long, 3–5 lines thick. Among fallen leaves in woods. Port Jefferson. August. The spores of this species are unusually small for the genus. This character, with the pale glutinous pileus and distant lamellae, marks the species as very distinct. I take pleasure in dedicating it to its discoverer, Professor F. S. Earle.

Marasmius biformis n. sp.

Pileus thin, submembranaceous, campanulate or nearly plane, generally umbilicate, glabrous, bay red or pale chestnut color and striatulate when moist, paler or grayish and rugosely striate when dry; lamellæ rather close, adnate and joined together at the stem, grayish tinged with creamy yellow; stem slender, stuffed or minutely hollow, covered with a dense, downy pubescence, which is brown when moist, cinereous when dry, sometimes slightly tawny toward the base.

Pileus 4–8 lines broad; stem about 1 inch long, .5 of a line thick. Gregarious in groves of coniferous trees. Sandlake, Rensselaer co. August.

The species is closely related to M. subnudus, but the plant is much smaller, the pileus is usually umbilicate and the stem not inserted. The mycelium binds together a mass of dirt and needles which adhere to the base of the stem when the plant is taken from the ground. In some groups nearly all the pilei are campanulate, in others they are nearly plane. This feature is suggestive of the specific name.

Marasmius tomentosipes Pk.

Much decayed, mossy, prostrate trunks of trees. North Elba. September. Similar in color to Omphalia campanella, but differing in its more scattered mode of growth, its longer straight stem sprinkled with tawny mealy particles or covered with tawny tomentum and in its less distinctly umbilicate pileus. In our specimens the stem is flocculent mealy at the top, has scattered flocculent particles below and a copious tomentum at the base, all of a tawny color. The specimens revive under the influence of moisture as in the genus Marasmius, and for this reason they have been referred to this genus. The species was founded on specimens collected in Idaho.

Marasmius leptopus n. sp.

Pileus thin, broadly convex or nearly plane, glabrous, obscurely and rugosely striate on the margin, reddish brown; lamellæ thin, narrow, close, adnate, white; stem slender, glabrous, hollow, inserted, whitish or pallid; spores oblong or narrowly elliptic, .0003–.00035 of an inch long, .00012–.00015 broad.

Pileus 3–5 lines broad; stem 1–1.5 inches long, about .5 of a line thick. Fallen leaves. Botanical garden, Bronx park. August.

Marasmius insititius Fr.

Fallen oak leaves. Port Jefferson. August.

Marasmius thujinus n. sp.

Pileus membranaceous, hemispheric or convex, often slightly umbilicate, subglabrous, distantly striate on the margin, cinereous tinged with lilac; lamellae few, distant, adnate, white; stem capillary, hollow, inserted, glabrous or with a few minute, scattered flocci toward the base, pallid, sometimes slightly brownish toward the base.

Pileus 1–1.5 lines broad; stem 6–12 lines long, scarcely thicker than a hair. Fallen leaves of arbor vitae, Thuja occidentalis. North Elba. September.

Under a strong lens the pileus is seen to be minutely pulverulent tomentose, and the stem adorned with a few minute, scattered flocci.

Leptonia hortensis n. sp.

Pileus thin, convex, umbilicate, hygrophanous, reddish brown and striatulate when moist, paler and silky when dry; lamellae thin, close, adnexed, whitish when young, pinkish when mature; stem short, thin, glabrous, hollow, colored like the pileus; spores angular, uninucleate, .0003–.0004 of an inch long, .0003 broad.

Pileus 5–10 lines broad; stem 8–12 lines long, about 1 line thick. Naked ground in gardens. Menands, Albany co. July.

Flammula pusilla n. sp.

PLATE M, FIG. 36–41

Pileus thin, convex becoming nearly plane, glabrous, viscid, pale buff or yellow ferruginous; lamellae narrow, close, adnate, whitish when young, brownish ferruginous when mature; stem short, equal, solid or stuffed, floccose fibrillose, whitish becoming ferruginous toward the base, which is slightly villose strigose, flocculent pulverulent at the top; spores elliptic, .0003 of an inch long, .00016 broad.

Pileus 6–12 lines broad; stem 8–15 lines long, about 1 line thick. Roots of stumps and water-soaked wood in open places. Smithtown, Suffolk co. August.

This species resembles small forms of Naucoria semiorbicularis in shape and color, but its more viscid pileus, adnate lamellae, solid or merely stuffed stem and peculiar habitat distinguish it. In very young plants a slight whitish veil is perceptible.

Craterellus subundulatus Pk.

Pileus thin, firm, subinfundibuliform, slightly floccose squamulose or fibrillose, grayish or grayish brown, wavy or lobed on the margin, the lobes often overlapping; hymenium slightly radiately rugose, creamy white; stem short, firm, solid, colored like the pileus; spores elliptic, .0003 of an inch long, .00016 broad.

Pileus 4–8 lines broad; stem 5–10 lines long, 1–1.5 thick. Gregarious or cespitose. Under beech trees. New York Botanical garden. August.

Closely related to C. sinuosus, from which it differs in its smaller size, solid, darker colored stem and slightly smaller spores. Formerly referred to the genus Thelephora.

Clavaria crassipes n. sp.

Stem thick, firm, solid or sometimes with a cavity at the base, glabrous white or whitish, repeatedly branched above, the branches very numerous, crowded, solid, terminating in obtuse or obtusely dentate tips, whitish or slightly yellowish; spores oblong, uninucleate, .0006–.0007 of an inch long, .00025–.0003 broad, with an oblique apiculus at the base.

Plant 3–6 inches high, 2–4 inches broad in the widest part, with the short stem about 1 inch thick. In woods and groves. Sandlake. August.

The flesh of the stem when cut or broken slowly assumes a smoky brown color.

Clavaria tsugina n. sp.

Stem very short, glabrous, branching from the base, solid, the branches few or many, suberect, sometimes crowded, flexible, rather tough, solid, terminating in acute tips, young plants and growing tips creamy yellow, older parts and mature plants

vinaceous cinnamon or reddish brown, spores ochraceous, elliptic, .0003 of an inch long, .00016 broad.

Plants 1–3 inches high, nearly as broad in the widest part. Prostrate, decaying trunks of hemlock, Tsuga canadensis. Adirondack mountains. July and August. Closely allied to C. abietina, from which it differs in its naked stem, in having no bitter flavor and in wounds not assuming a green color.

Scotium warnei Pk.

Near Gouverneur, St Lawrence co. October. Mrs E. C. Anthony. This is the most eastern station known to me for this western species. It has been thought by some mycologists to be the same as S. acuminatum, but it appears to me to differ constantly from the description of that species in shape and color. It is very variable in shape and is sometimes umbonate, but I have never seen any specimens that could properly be called acuminate, nor any having an ochraceous or alutaceous color. It does not seem to be wise to give up a certainty for an uncertainty and to throw together forms which are constantly diverse.

Tylostoma pearlatum White

Sandy soil. Karner, Albany co. Our specimens are a little smaller than the typical form, which was collected in Nebraska.

Tylostoma punctatum Pk.

Sandy soil. West Albany. May. Formerly confused with T. fimbriatum, from which it may be distinguished by the punctate inner peridium.

Licea variabilis Schrad.

Decaying wood of spruce. Oldforge, Herkimer co. August. Very variable in form. Sometimes the spores adhere to each other in groups.

Aecidium ligustri Strauss

Living leaves of privet, Ligustrum vulgare. Menands. June. Altamont. F. J. H. Merrill.

Cintractia affinis n. sp.

Stroma continuous, usually surrounding the stem of the host plant and forming patches 6–24 lines long, at first covered by a

white crust, which at length ruptures and disappears, exposing the surface of a jet black, firm, but slightly pulverulent spore mass; spores globose or subglobose, minutely and closely papillose, involved in a thin, obscure, hyaline, gelatinous coat, black, .0006–.0008 of an inch broad.

Living stems of Rhynchospora macrostachya Torr. Smithtown, Suffolk co. August.

This interesting species is closely related to C. leucoderma, from which it differs in its longer, thinner and more intensely black spore mass, which occupies the stem instead of the sheaths and flower spikes, and by its more globose spores, which are minutely and closely but not spirally papillose. Two spore masses usually develop on one stem. These are commonly separated by a slight interval. Occasionally the lower is free from the white crust, while the upper still retains it. The thickness of the spore mass, including the inclosed stem, is usually 1–1.5 lines.

Phyllosticta grisea n. sp.

Spots suborbicular, small, 1–1.5 lines broad, arid, gray with a purplish brown margin, brown beneath, occasionally brown above; perithecia epiphyllous, minute, erumpent, black; spores elliptic, hyaline, .00025–.0003 of an inch long, .00016 broad.

Living leaves of Crataegus praecox. Crown Point. September.

Gloeosporium phaeosorum Sacc.

Dead canes of blackberry. Farmer, Seneca co. May. F. C. Stewart.

Sporotrichum pone n. sp.

Hyphae slender, .00008–.00012 of an inch thick, procumbent, branched, slightly interwoven, white; spores colorless, subglobose. .00016–.00032 of an inch broad.

Sheaths and culms of Kentucky blue grass, Poa pratensis. Geneva. June. F. C. Stewart. The fungus occurs both without and within the sheaths of culms that have died, but whether their death was due to the attack of the fungus or of insects is not clear.

Penicillium digitatum (Fr.) Sacc.

Decaying lemons. Albany. Sometimes the whole surface of the lemon is covered with a dusty, bluish green coat of this mold.

Penicillium pallidofulvum n. sp.

Sterile hyphae creeping, forming a stratum of dense, tawny tomentum; fertile hyphae erect, septate, simple or with one to three short branches or protuberances at the top; spores catenulate, elliptic, .00012–.00016 of an inch long, at first white, soon pale tawny or ochraceous.

Parasitic on Lactarius deceptivus. Round Lake. July.

Macrosporium lagenariae Thum.

On fruit of gourds, Lagenaria vulgaris. Albany. January. W. L. Smith.

Fusarium laxum n. sp.

Tufts minute, loosely gregarious, white; sporophores slender; spores narrowly fusiform, slightly curved, 3–5 septate, hyaline, .001–.002 of an inch long.

Dead stems of scouring rush, Equisetum hiemale. Delmar. July. Apparently a peculiar species belonging to the section Fusisporium but having tufted sporophores.

Stilbum resinaria n. sp.

Stem cylindric, about .25 of a line long, white; capitulum globose or depressed globose, creamy yellow; spores minute, subglobose, .00008–.00012 of an inch long, nearly as broad.

Resinous spots on bark of balsam fir, Abies balsamea. Adirondack mountains. Closely allied to S. rehmianum.

Helvella ambigua Karst.

Decaying wood. Piseco. August. G. F. Atkinson. This species may easily be confused with H. infula, from which it scarcely differs except in its pileus having a reticulated surface and in its longer, more fusiform spores.

Detonia fulgens (Pers.) Rehm

Under spruce and balsam fir trees. North Elba. May. Near Ithaca. April. E. J. Durand.

Geopyxis carbonaria A. & S.

Burnt soil. Ithaca. May. Specimens of this and the nine following species were contributed by Mr Durand.

Calloria caulophylli (E. & E.) Rehm

Dead stems of blue cohosh, Caulophyllum thalictroides. Ithaca. May.

Lachnum inquilinum (Karst.) Schroet.

Dead stems of scouring rush, Equisetum hiemale. Ithaca. May.

Sclerotinia smilacinae Durand

Dead rootstocks of wild spikenard, Smilacina racemosa. Ithaca. May.

Ciboria americana Durand

Dead chestnut burs. Ithaca. October.

Ciboria sulphurella (E. & E.) Rehm

Dead petioles of ash leaves. Farmington, Ontario co. September.

Peziza violacea Pers.

Burnt soil. Ithaca. May.

Caldesia sabinae (Dellot) Rehm

Loose bark of red cedar, Juniperus virginiana. Ithaca. November.

Helotium scutula vitellinum Rehm

Dead stems of herbs. Ithaca. October.

Ascobolus atrofuscus Ph. & Pl.

Charred wood. Canandaigua. September.

Melanospora vervecina (Desm.) Fckl.

Decaying wood of yellow birch, Betula lutea. North Elba. September.

Leptosphaeria variegata n. sp.

Perithecia numerous, minute, depressed globose, seated on indeterminate spots of a pinkish, grayish or brownish color, at first covered by the epidermis, then erumpent, black; asci cylindric;

spores oblong or subfusiform, triseptate, colored, .0[illegible] .0008 of an inch long, .00016–.00018 broad.

Dead stems of pokeweed, Phytolacca decandra. Near Trenton Falls. September.

D

REMARKS AND OBSERVATIONS

Lepidium virginicum L.

A dwarf form, 4 to 8 inches high and without branches, or nearly so, was found growing in sandy soil near Delmar. A similar form of L. apetalum Willd. was found growing from a thin coating of vegetable mold covering flat surfaces of outcropping rocks near Westport. This was in flower in May, the other in July.

Lepidium ruderale L.

Fine specimens of this species were found by the roadside near Lansingburg. May and June.

Raphanus raphanistrum L.

A form with flowers of a peculiar brownish buff color, changing to reddish brown with age, was found growing in sandy soil near Karner. It was associated with the ordinary form and with the cultivated radish, R. sativus.

Viola papilionacea domestica (Bickn.) Poll.

Waste places about Port Jefferson. August. In fruit from cleistogamous flowers.

Drosera rotundifolia L.

A form of the round leaved sundew occurs near Port Jefferson, in which the scape divides above, forming two flowering branches with a flower in the axil.

Rubus occidentalis pallidus Bail.

Near Albia, Rensselaer co. In fruit in July. This differs from the common form of the species in having pale yellowish fruit.

Kneiffia pumila (L.) Spach

A much branched form, with branches straight and erect, or nearly so, and flowering abundantly, was found near North Albany in July.

Myriophyllum humile (Raf.) Morong

Muddy shore of a small pond near Smithtown, Suffolk co. August. A small, rare and pretty little plant.

Erigeron ramosus (Walt.) B. S. P.

The variety discoideus has been unusually plentiful about Albany the past season. The peculiarly cool, wet season was probably favorable to it.

Galinsoga parviflora hispida DC.

This introduced plant is reported by Mrs M. A. B. Kelly to be acting like a pestilent weed in a garden at Gloversville.

Antennaria neglecta simplex n. var.

Stems 7–9 inches long, heads of flowers single or occasionally two, very rarely three; involucral bracts oblong or linear, acute or the outer obtusish, brownish with white tips. Sandlake. May.

These plants grew in a patch about 6 feet in diameter. They have a peculiar appearance by reason of the single heads.

Helianthus giganteus L.

Roadsides. Keene, Essex co. September. A rare plant in this part of the State.

Polymnia canadensis radiata Gray

Near Syracuse. June. Miss M. L. Overacker.

Xanthium canadense L.

A dwarf form of this species, 6–10 inches high, is plentiful on sandy and gravelly shores of Lake Champlain at Crown Point. The burs sometimes have but one beak, and the prickles are strongly curved.

Verbena hastata L.

A plant having a close resemblance to this species was collected at Trenton Falls. Its spikes are less dense, and its flowers are pink. It is probably a hybrid of V. hastata and V. urticifolia.

Origanum vulgare L.

A white flowered form occurs at Trenton Falls.

Tetragonanthus deflexus (Sm.) Kuntze

This is Halenia deflexa of the *Manual* and is a rare plant in our State. It was found many years ago near Trenton Falls by Dr J. V. Haberer. In company with him, I visited the locality in August last and found the plant still there but in small quantity. A specimen in the herbarium represents another locality for it in Sullivan county. In *New York State Flora* Dr Torrey credits it to margins of lakes in the northern part of the State on the authority of Dr Hadley. It is desirable that any one finding it within our State should guard as far as possible against its extermination.

Physalis heterophylla ambigua (Gray) Rydb.

Sandy soil. Karner, Albany co. June and July. In our specimens the anthers and their short, thick filaments are purple when young. The greenish yellow corolla has the brown central spot lobed, and from the lobes brown lines radiate, giving the spot a fringed appearance. The lower leaves are often orbicular.

Polygonum convolvulus L.

A form having a short, erect, sparingly branched stem occurs in sandy soil about Karner. It corresponds to variety breve of P. cilinode.

Lilium canadense L.

The Canada lily was found growing in great abundance in a low, wet meadow near Mount Kisco, Westchester co., by W. P. Judson. The plants were small, the stems short and slender, each bearing, in most cases, a single small flower, and the leaves were smaller than usual. In an adjoining meadow on higher and drier ground the usual form of the species was plentiful. The two forms afford a good illustration of the influence of soil and moisture on plant development. The cold, wet soil of the low meadow was evidently unfavorable to the proper development of this lily, and suggests the importance of a well drained soil for plants that do not like cold, wet feet.

Scirpus sylvaticus bissellii Fern.

Low ground. West Albany. Several years ago a single specimen of this variety, was collected by the late Rev. J. H. Wibbee and presented to the herbarium. The station has since been destroyed, and I know of no other in the State where this variety has been found.

Sporobolus longifolius (Torr.) Wood

Rocky sides of Skenes mountain, Whitehall. September. It was associated with Sporobolus neglectus and Aster concinnus. Quercus acuminata (Mx.), the eastern form of which is Q. alexanderi Britton, was growing near it. This mountain is an interesting botanical station.

Buxbaumia indusiata Brid.

Near Rochester. October. M. S. Baxter. This is the fourth and most western station for this rare moss in our State. It has been found in the Catskill mountains and in two places, Horseshoe pond and Lake Placid, in the Adirondack mountains.

Amanitopsis volvata (Pk.) Sacc.

An unusual form of this species was found in the wooded grounds of the New York botanical garden. A part of the volva was closely adherent to the center of the pileus, as in Amanita calyptrata, and the base of the stem was more closely sheathed than usual by the remains of the volva.

Amanitopsis strangulata Fr.

Piseco and North Elba. August and September. This northern form differs from the more southern one in having the pileus adorned with unequal fragments of the ruptured volva instead of nearly equal, wartlike remnants.

Clitocybe dealbata deformata n. var.

Pileus thin, very irregular, convex or centrally depressed, wavy or lobed on the margin, the upper surface sometimes partly transformed into a hymenium consisting of daedaloid pores in the center and branching and anastomosing lamellae toward the margin, snowy white where free from hymenial development,

flesh pure white, taste farinaceous; lamellae close, adnate or slightly decurrent, transversely venose, often anastomosing or connected by veins, frequently eroded on the edge and sometimes transversely split, whitish; stem irregular, sometimes compressed, more or less confluent at the base, stuffed or hollow, white, with a soft, pure white, downy tomentum below; spores subglobose .00012–.00016 of an inch long, nearly as broad.

On mushroom beds in a greenhouse. Newark, Wayne co. March. C. E. Clark and B. C. Williams. The specimens grew in mushroom beds made in a poorly lighted apartment, in which a temperature of 55°–60° was maintained. These conditions doubtless had some influence in causing the irregular, tufted mode of growth. In their pure whiteness and in the tendency of the gills to anastomose these mushrooms resemble Clitocybe similis, but the thin pileus and the farinaceous taste and odor indicate a relationship with C. dealbata so intimate that it is recorded as a variety of it. That species is also sometimes found growing in mushroom beds.

Clitocybe multiceps Pk.

A singular form of this species was found growing under a flagstone in Newark by Mr B. C. Williams. In the effort to expand the pileus in the open air, the stem was greatly elongated. In one specimen the stem was 13 inches long, in the other, 16.

Clitocybe tortilis gracilis n. var.

Pileus thin, convex and slightly umbilicate, becoming centrally depressed or infundibuliform with age, irregular, striate on the margin and reddish flesh color when moist, paler when dry; lamellae broad, distant, adnate or decurrent, pruinose when old and dry; stem slender, firm, glabrous, hollow but the cavity small.

Pileus 3–6 lines broad; stem 6–10 lines long, about .5 of a line thick. Gregarious on moist, shaded ground. New York Botanical garden. August. F. S. Earle.

This differs from the typical form of the species in its more slender stem, more distant lamellae and more funnel-form pileus.

Collybia uniformis Pk.

PLATE M, FIG. 7-16

Specimens larger than the typical form were found in North Elba, growing on decaying wood of balsam fir, Abies balsamea. After the moisture has escaped from the pileus, it has a pruinose appearance, which is due to a minute, whitish pubescence. The stem is sometimes compressed. In its general characters and tufted mode of growth it is closely allied to C. familia.

Lactarius subdulcis oculatus n. var.

PLATE 83, FIG. 20-24

Pileus moist, subhygrophanous, vinaceous buff with a small central spot or umbo persistently reddish brown or chestnut color. Otherwise like the species. Under spruce and balsam fir trees. North Elba. September.

Hygrophorus capreolarius Kalchb.

This beautiful species inhabits groves of spruce and balsam fir in North Elba, but I have seen it in no other part of the State. It is gregarious or cespitose, has an attractive appearance and an agreeable flavor when fresh, but when fried in butter it develops a bitter taste which makes it objectionable as an edible mushroom.

Russula olivascens Fr.

Port Jefferson. August. European authors in their descriptions of this species do not mention the color of the spores. In our plant they are ochraceous.

Russula granulata lepiotoides Atk. in litt.

This variety differs from the typical form in its pileus, whose upper surface soon becomes rimose squamose. It was common, in August, in the woods about Piseco, Hamilton county.

Cantharellus cibarius albipes n. var.

This differs from the usual form of the species in having the stem white.

Stropharia siccipes radicata n. var.

Differs from the species in having a long, radicating base to the stem. This probably depends on and is due to the fact that it

grows from manure buried in the earth. New York Botanical garden. June. F. S. Earle. Menands. July.

Marasmius resinosus niveus n. var.

Whole plant pure white. In other respects like the species. Port Jefferson. August.

Hypholoma sublateritium squamosum Cke.

Differs from the typical form in having the pileus spotted with brownish, fibrillose scales. In the dried specimens these scales are less distinct. Piseco. August.

Hypholoma subaquilum Banning

Decaying, prostrate trunks of trees in woods. Piseco. August. This species sometimes occurs in great abundance. The margin of the pileus is often adorned with whitish, floccose fibrils of the veil, which in the young plant may be interwoven and form a delicate membrane which conceals the lamellae. As the pileus expands, this separates from the stem and adheres to the margin of the pileus, curving under and still hiding the outer extremities of the lamellae. In the mature plant, however, all vestiges of the veil have generally disappeared. This species is most closely allied to H. appendiculatum, scarcely differing from it except in the darker color of the young lamellae and the smaller spores. Like that species it is hygrophanous, becoming paler and rugose in drying.

Coprinus micaceus Fr.

Specimens of the glistening coprinus were found growing from a stratum of its coarse, felty ozonium or mycelium, which had overspread a part of the surface of an old, prostrate tree trunk in woods near Piseco. August.

Merulius tenuis Pk.

Much decayed wood. Piseco. The type specimens of this species were collected near Ithaca by Professor W. R. Dudley. Fine specimens of it were collected at Piseco by Professor G. F. Atkinson. It is a rare species.

Odontia lateritia B. & C.

On a decorticated, prostrate pine trunk in woods. North Elba. September. The specimens on pine are thinner than those on oak, and, where the surface of the wood is smooth, the fungus is to some extent separable from it. The species is doubtless the same as Phlebia hydnoidea Schw. and should take the name Odontia hydnoidea (Schw.).

Nidularia pulvinata (Schw.) Fr.

Fine specimens were found in North Elba, growing on decorticated wood of spruce. This fungus was first described by Schweinitz under the name Cyathus pulvinatus. Fries changed the name to Nidularia pulvinata, and recently the species has been transferred to another genus, and it stands as Granularia pulvinata (Schw.) White.

E

EDIBLE FUNGI

Tricholoma subacutum Pk.

SUBACUTE TRICHOLOMA

PLATE 82, FIG. 7-14

Pileus ovate or subcampanulate, becoming broadly convex or nearly plane, usually prominently and acutely umbonate, dry, silky fibrillose or virgate with innate brown or blackish fibrils, cinereous, grayish brown or blackish brown, the umbo commonly darker, sometimes black; lamellae rather close, rounded behind, adnexed, white; stem rather long, equal, solid, silky fibrillose, white; spores broadly elliptic or subglobose, .00025–.0003 of an inch long, .0002–.00025 broad.

The subacute tricholoma is easily recognized by its prominent pointed umbo, by the minute, radiating, brown or blackish lines or fibrils on its dry cap and by the white color of its flesh and stem. It is not abundant, and has been found by me in North Elba only. It grows in woods and in groves of young spruce and balsam fir trees, appearing in September. The cap varies in color, being pale gray, grayish brown or blackish brown. The umbo is frequently darker than the rest, and in dark colored

specimens it is nearly or quite black. The cuticle is separable from the white flesh beneath. The flesh has no decided odor, and its taste is sometimes acrid and sometimes mild. The gills are rather broad but close, rounded behind and slightly attached to the stem. They are white, but are apt to become dingy or brownish in drying. The stem is rather long, equal, smooth or slightly fibrillose, solid, or hollow from the erosion of insect larvae and white.

The cap is 1.5–3 inches broad; the stem 2–4 inches long, 3–6 lines thick. The species is so closely related to the European virgate tricholoma, Tricholoma virgatum, that it is with some hesitation that I have kept it distinct. In the virgate tricholoma the taste is described as bitter, intensely bitter or bitter in the young plant and more mild in the mature one, the umbo is represented as low, broad and blunt and the cuticle on it as breaking up and forming scales. The stem is described and figured as more or less bulbous. These characters are not found in our plant, and their absence seems to justify its separation.

Tricholoma radicatum Pk.

ROOTED TRICHOLOMA

PLATE 82, FIG. 15–19

Pileus fleshy, deeply or broadly convex, dry, silky fibrillose or minutely squamulose, grayish brown, the center darker and often tinged with reddish brown, flesh white, taste disagreeable; lamellae thin, close, emarginate, adnexed, white; stem equal or nearly so, radicating, hollow, white; spores broadly elliptic or subglobose, .0002–.00024 of an inch long, .00016–.0002 broad.

The rooted tricholoma is a rare species with us. It occurs under spruce, balsam fir and other cone bearing trees in North Elba, and is solitary or scattered in its mode of growth. It was found in September and is apparently an autumnal species. Its cap is broadly convex when mature, but in immature plants it is similar in shape to an open umbrella. It is firm but flexible, and its cuticle is separable from the white flesh. The surface is dry, minutely silky and sometimes roughened with minute scales. Its color is gray or grayish brown, generally a little darker in the center, where it is tinged with reddish brown. The flesh is

white, but its taste is unpleasant. The gills are closely placed, wide in the middle, excavated at the stem end, where there is a slight prolongation running down on the stem and giving its top a striated appearance. Their color is white and unchangeable. The stem is smooth or slightly fibrillose, hollow but with a small cavity and white. There is a rootlike prolongation at the base, which tapers downward and penetrates the earth.

The cap is 2–3 inches broad; the stem 1.5–4 inches long, 3–5 lines thick. The unpleasant flavor is lost in cooking.

Tricholoma silvaticum Pk.

WOOD TRICHOLOMA

PLATE 82, FIG. 1-6

Pileus convex or nearly plane, dry, glabrous, subumbonate, whitish; lamellae broad, ventricose, subdistant, adnexed, white; stem equal or nearly so, glabrous, solid, white; spores elliptic .00045–.0005 of an inch long, .00025–.0003 broad.

The silvan tricholoma is a small, well formed mushroom, growing among mosses or fallen leaves in woods. Its cap is convex or nearly plane with decurved margin. It is generally crowned with a broad, slightly elevated umbo, and is smooth, dry and whitish. The flesh is thin and white, the taste farinaceous. The gills are broad with broad interspaces. They are deeply notched next the stem and white. The stem is equal in diameter in all its parts or sometimes slightly tapering upward. It is smooth or obscurely fibrillose, slightly mealy or pruinose at the top, solid, firm and white.

The cap is 1–1.5 inches broad; the stem 1–2 inches long, 2–4 lines thick. This species has been found by me in North Elba only. It occurs in September. It may be separated from the white cap tricholoma, T. leucocephalum, and from the disagreeable tricholoma, T. inamoenum, by the absence of any distinct odor and by the color of its cap, which is not pure white, as in these species but a creamy white or pale buff.

Hygrophorus pudorinus Fr.

BLUSHING HYGROPHORUS

PLATE 83, FIG. 1-6

Pileus fleshy, firm, convex becoming nearly plane, glabrous, viscid when moist, pinkish buff, flesh white, taste mild; lamellae

distant, adnate becoming decurrent, white; stem stout, solid, equal, white, roughened with white points at the top; spores white, elliptic, .0003–.0004 of an inch long, .00016–.00024 broad.

The blushing hygrophorus is a large and beautiful species, clean and attractive and a fine addition to our list of edible mushrooms. It is gregarious or tufted in its mode of growth and grows most frequently but not always under spruce and balsam fir trees, or where these trees have previously grown. It appears late in the season. Our plant differs in some minor features from the description of the European plant, but in essential characters the agreement is so close that there can be little doubt of its identity. Its fleshy, firm cap is convex or broadly conic when young, with the margin involute and often downy and studded with drops of moisture, though the margin in the European plant is described as naked. When mature it is broadly convex or nearly plane, but sometimes has a broad but slight central elevation or umbo. It is very smooth, viscid when moist and of a beautiful, delicate pinkish buff color, sometimes slightly tinged with brown or reddish brown in the center. The flesh is white, slightly tinted under the thin, separable pellicle with the color of the cap. The flavor is mild, and it has no very distinct odor. The gills are at first attached to the stem by the entire width of the inner extremity, but, when the cap is fully expanded, they are somewhat decurrent. They are rather wide apart, white and sometimes have a slight salmon-colored reflection. The stem is stout, nearly equal in diameter throughout but sometimes abruptly pointed at the base, solid, white and roughened with white points at the top. These points or dots are apt to become reddish in drying and they sometimes extend nearly to the base of the stem. The stem of the European plant is described as constricted at the top, but figures of it by European mycologists do not show this character, from which I conclude that it is not constant.

The cap is 2–4 inches broad; the stem is 2–5 inches long, 6–10 lines thick. Fried in butter, it has an agreeable flavor and may easily be placed among the first class mushrooms.

Lactarius luteolus Pk.

YELLOWISH LACTARIUS

PLATE 83, FIG. 7-11

Pileus fleshy, firm, convex or nearly plane, sometimes umbilicately depressed in the center, pruinose, more or less rugose, yellowish or buff color, flesh white, becoming brown where wounded, taste mild, milk copious, white or whitish, changing to brown; lamellae close, adnate or slightly rounded behind, whitish, becoming brown where wounded; stem short, equal or tapering downward, firm, solid or somewhat spongy within, white or buff color; spores white, globose, .0003 of an inch broad.

The yellowish lactarius is a very distinct species, easily known by its buff color, copious white milk, changing to brown on exposure to the air, and by its minutely velvety cap, which to the naked eye has a pruinose appearance. The cap is broadly convex or nearly flat when mature, sometimes with a slight central depression. Its surface is seen by the aid of a lens to be covered with a minute velvety pubescence, which is soft to the touch and when moist is slightly sticky. The surface is sometimes even but more often rugose. Occasionally there is a narrow encircling furrow or band near the margin. The color is whitish, buff or yellow buff, becoming more pronounced in drying. The flesh is white or whitish. Wounds of any part of the plant assume a brown color. The gills are narrow, closely placed, attached to the stem but scarcely decurrent on it, whitish. The stem is short, cylindric or rarely tapering downward, solid or somewhat spongy in the center and colored like the cap.

The cap is 1.5–3 inches broad; the stem is 1–1.5 inches long, 3–5 lines thick. The plant grows in a scattered manner among fallen leaves in woods and appears in August. Lactarius foetidus, the fetid lactarius, is closely related and may yet prove to be a mere variety having a strong disagreeable odor and less copious milk.

Lactarius subdulcis (Bull.) Fr.

SWEET LACTARIUS

PLATE 83, FIG. 12-24

Pileus thin, broadly convex becoming nearly plane or centrally depressed, usually with a small papillalike umbo, even, glabrous,

zoneless, tawny red, bay red or cinnamon red, flesh whitish, often tinged with red, taste slightly or tardily acrid, milk white, unchangeable; lamellae thin, close, adnate or slightly decurrent, whitish, pallid or rufescent; stem short, equal or tapering upward, stuffed or hollow, glabrous, colored like or a little paler than the pileus; spores white, globose, .0003–.00035 of an inch broad.

The sweet lactarius is one of our most common species. It is rather small, but it often grows in sufficient abundance to compensate for its deficiency in size. It is gregarious in its mode of growth and occurs in a great variety of soil and location. It may be found in woods and in open places, on naked soil or among fallen leaves or growing from decaying wood or among living mosses. In dry weather, when it can no longer be found in exposed dry places, it still persists in swamps, sphagnous marshes and wet, shaded places. It appears from June to October.

Its cap is generally broadly convex or nearly plane, but sometimes by the elevation of the margin it becomes centrally depressed or almost funnel-form. Usually there is a small prominence or umbo in the center, but often this is entirely absent. The surface is quite smooth and sometimes moist and shining. Its color varies from light red or yellowish red to bay red. The margin is sometimes wavy or lobed. The gills are thin, narrow, closely placed and vary in color from whitish to rufescent, resembling the cap in color. The stem may be short or long according to its place of growth. When growing among mosses, it is apt to be longer than on bare ground. Sometimes there is a coarse villosity or hairiness at the base of the stem, otherwise it is smooth. It is generally hollow and brittle. In color it is similar to or a little paler than the cap. The white milk does not change color, and the taste varies somewhat, being in some cases almost mild, in others tardily but decidedly acrid.

The cap is usually 1–2 inches broad; the stem 1–2.5 inches long, 1–3 lines thick. The acrid taste is lost in cooking, and when fried in butter it may be regarded as a fairly good though not highly flavored mushroom. Several varieties of this variable species have been described, but a well marked one, of which I

find no description, was discovered in North Elba, and is described in another place in this report, under the name Lactarius subdulcis oculatus. The varietal name is suggested by the dark colored umbo or eyelike spot in the center of the cap.

Russula crustosa Pk.

CRUSTED RUSSULA

PLATE 81, FIG. 1-7

Pileus fleshy, firm, very convex becoming nearly plane or centrally depressed, slightly viscid when moist, even or striate and rimose areolate on the margin, commonly even in the center, flesh white, taste mild or sometimes tardily acrid; lamellae moderately close, narrowed behind, some of them forked, white; stem short, stout, equal, stuffed or hollow, white; spores white, subglobose or broadly elliptic, .0003–.0004 of an inch long, .00025–.0002 broad.

The crusted russula is closely related to the greenish russula, R. virescens, and the cracked russula, R. cutefracta. From the former it differs in its slightly viscid cap of which the cuticle cracks and forms small, crustlike patches or scales on the margin but usually remains entire in the center; from the latter it is distinct by the absence of any red or purplish tints in the flesh and the stem. Even in purplish specimens the flesh and stem are wholly white.

The cap is very convex or almost hemispheric when young, nearly plane or centrally depressed when mature. The surface cracks toward the margin as in R. cutefracta, while the center nearly always remains entire. These surface chinks form small areolae or scales which appear like fragments of a crustaceous cuticle.

The color varies greatly. It may be straw yellow, pale ochraceous, brownish ochraceous, greenish with a yellowish or pale ochraceous center or a dull brownish purple. The center is sometimes paler, sometimes darker than the margin. The flesh is white, and the taste mild or sometimes slightly and tardily acrid. The acridity if present is destroyed by cooking. The gills are white, narrowed toward the stem and nearly free. They are sometimes forked, specially near the stem, and intervening

short ones occur near the margin. They are white and unchangeable. The stem also is white. This mushroom is more common with us than the greenish russula, which it resembles in size and flavor. It grows in woods and open ground and appears in July and August.

Cantharellus dichotomus Pk.

DICHOTOMOUS CHANTARELLE

PLATE 84, FIG. 8-21

Pileus fleshy, soft and flexible, subconic when young, with the margin involute and downy or flocculent, convex, nearly plane or centrally depressed when mature, even or with a small pointed umbo, dry, glabrous, variable in color, flesh white, taste mild; lamellae narrow, close, dichotomous, decurrent, white or yellowish; stem equal or tapering upward, solid, glabrous or slightly fibrillose; spores narrowly elliptic, .0003–.0004 of an inch long, .00016 broad.

The dichotomous chantarelle is a small but common species in our hilly and mountainous districts. It grows in woods among mosses or in pastures and bushy places among grasses and fallen leaves. The cap is generally broadly convex with decurved margin, but sometimes it becomes centrally depressed by the elevation of the margin. The umbo is small and usually acute, or papillalike, but it is often entirely absent. The margin is involute and minutely flocculent or downy when young, but it soon becomes naked. The surface is smooth or obscurely silky and occasionally becomes minutely rimose areolate. The color is very variable and may be grayish white, grayish brown, yellowish brown, blackish brown or bluish gray. The flesh is white or whitish, and the taste mild. The gills are narrow, thin, close, decurrent and 1–3 times forked. They are white or whitish, sometimes tinged with yellow. In moist weather wounds of them and also of the stem sometimes become reddish. The stem is equal in diameter or slightly tapering upward. It is glabrous or slightly fibrillose, solid, whitish or pallid or colored like the pileus, and when growing among mosses is clothed below with a soft, dense, white tomentum, which binds it so closely to the mosses that it is difficult to take a specimen without breaking the stem unless the mosses are taken with it.

The cap is 6–18 lines broad, the stem is 1–3 inches long, 2–4 lines thick. It is gregarious and appears from July to September. As an edible mushroom it is not as tender as some nor as highly flavored, but it is satisfactory and enjoyable.

It is related so closely to Cantharellus umbonatus that it has sometimes been regarded as a variety of it or has even been confused with it, but the gills of that species are described as straight, and in our plant they are constantly repeatedly forked as in C. aurantiacus and C. albidus. The umbo in our plant is small and pointed and often wholly wanting, but in C. umbonatus it is represented as broad and blunt. Because of these discrepancies it seems best to keep our plant distinct.

F

PLANTS OF THE SUSQUEHANNA VALLEY AND ADJACENT HILLS OF TIOGA COUNTY

BY FRANK E. FENNO

The territory included in this flora consists of a strip of land about 8 miles wide, lying on both sides of the Susquehanna river and extending nearly east and west through the county. Its surface is broken by the foothills of the Alleghany mountains. These consist of a series of ridges from 1200 to 1500 feet above tide. They are divided diagonally by the valley of the Susquehanna and seperated laterally by the valleys of the Apalachin, Wapasening, Owego, Catatonk, Pipe and Cayuta creeks. These creeks have rapid currents. Their valleys are narrow in the upper part, but expand toward the river into broad and level fields.

The Susquehanna winds its way through a tortuous valley bordered on either side by banks, which generally slope gradually to the broad and rolling hilltops. Yet the valley is defined in some places by steep and rocky acclivities which rise from 300 to 400 feet above the surface of the river. These acclivities furnish congenial homes for many rock-loving species of plants. The soil in the valleys is mainly alluvial, lying on a deep drift consisting of sand, gravel and clay. This drift forms the soil of the adjacent hills. The territory contains very little

broken country, and the rock outcrops are all sandstone belonging to the Chemung group. Yet the conditions are such as are favorable to plant life and to a rich and diversified flora. A few plants of the region farther north have been brought down by the mighty torrent of the river, while others have slowly crept up from the ocean, and have found congenial homes in the alluvial soil along the river. The writer's knowledge of this flora has been acquired during his past seven years' residence in Tioga county. He has gone over the entire territory and has collected specimens of nearly every species and variety included in this list.

The *Illustrated Flora* of Britton and Brown has chiefly been followed in nomenclature and in the arrangement of orders. When the names of the species and varieties differ from those in the sixth edition of Gray's *Manual*, the names in the latter are given second place.

Cordial acknowledgment of assistance in the identification of critical species is hereby tendered to Professor F. Lamson Scribner, Edward S. Burgess, Dr John K. Small, Dr Nathaniel L. Britton and specially to Charles H. Peck and the late Dr Thomas C. Porter. They have, by their correspondence extending over several years, aided and encouraged the writer in the study of the plants of this region.

PTERIDOPHYTA

Ferns and fern-allies

OPHIOGLOSSACEAE

Botrychium obliquum Muhl.

B. ternatum var. obliquum D. C. Eaton

Oblique grape fern

On knolls in old clearings and pastures. Frequent. September.

Botrychium dissectum Spreng.

B. ternatum var. dissectum D. C. Eaton

Cut-leaved grape fern

Damp pastures. Barton. Rare. September.

Botrychium virginianum (L.) Sw.

Rattlesnake fern

Rich moist woods. Common. August.

OSMUNDACEAE

Osmunda regalis L.

Royal fern

Swamps and wet woodlands. Frequent. June-July.

Osmunda cinnamomea L.

Cinnamon fern

Low woods, thickets and swamps. Common. May-July.

Osmunda claytoniana L.

Clayton's fern

Fields and woodlands. Common. May-June.

POLYPODIACEAE

Onoclea sensibilis L.

Sensitive fern

Wet places. Common. August.

Matteuccia struthiopteris (L.) Todaro

Onoclea struthiopteris Hoffm.

Ostrich fern

Along streams in alluvial soil. Common. August.

Dennstaedtia punctilobula (Michx.) Bernh.

Dicksonia pilosiuscula Willd.

Hay-scented fern

Open woods and thickets. Common. August.

Cystopteris bulbifera (L.) Bernh.

Bulblet-bearing fern

Rocky woodlands. Rare. Near Campville. July-August.

Cystopteris fragilis (L.) Bernh.

Brittle fern

In wet, shaded soil and on cliffs. Common. May-July.

Dryopteris acrostichoides (Michx.) Kuntze

Aspidium acrostichoides Sw.

Christmas fern

Woods, specially under evergreens. Common. August.

Dryopteris noveboracensis (L.) Gray

Aspidium noveboracense Sw.

New York fern

Moist woods. Common. August.

Dryopteris thelypteris (L.) Gray

Aspidium thelypteris Sw.

Marsh shield fern

Swamps and low grounds. Common. Summer.

Dryopteris cristata (L.) Gray

Aspidium cristatum Sw.

Crested shield fern

Swamps. Common. July-August.

Dryopteris cristata clintoniana (D. C. Eaton) Underw.

Aspidium cristatum clintonianum (D. C. Eaton) Underw.

Wet woods. Rare. August.

Dryopteris marginalis (L.) Gray

Aspidium marginale Sw.

Marginal shield fern

Rocky banks in deep shade. Common. July-August.

Dryopteris spinulosa (Retz) Kuntze

Aspidium spinulosum (Sw.) Kuntze

Spinulose shield fern

Wet woods and swamps. Infrequent.

Dryopteris spinulosa intermedia (Muhl.) Underw.

Aspidium spinulosum var. intermedium D. C. Eaton

In woods wet or dry. Common. August-September.

Dryopteris boottii (Tuckm.) Underw.

Aspidium boottii Tuckm.

Boott's shield fern

Swamps. Rare. Barton. July-September.

Phegopteris phegopteris (L.) Underw.

P. polypodioides Fee

Long beech fern

Rich woods. Frequent. August.

Phegopteris hexagonoptera (Michx.) Fee

Broad beech fern

Rich woods. Frequent. August.

Phegopteris dryopteris (L.) Fee

Oak fern

Rich moist woods. Common. The three species of Phegopteris are frequently seen growing together. August.

Woodwardia virginica (L.) J. E. Smith

Virginia chain fern

Bogs north of Barton. Rare. July.

Camptosorus rhizophyllus (L.) Link

Walking fern

Found sparingly on a few rocks west of Barton. Au October.

Asplenium trichomanes L.

Maidenhair spleenwort

Rocky walls of deep ravines and on stony banks. Common. July-September.

Asplenium platyneuron (L.) Oakes

A. ebeneum Ait.

Ebony spleenwort

On rocks and banks. Infrequent. July-September.

Asplenium acrostichoides Sw.

A. thelypteroides Michx.

Silvery spleenwort

Rich moist woods. Infrequent. August-October.

Asplenium filix-foemina (L.) Bernh.

Lady fern

In woods, thickets and by walls and fences. Common. The fronds are quite variable. July-August.

Adiantum pedatum L.

Maidenhair fern

Abundant in moist woodlands. July-September.

Pteris aquilina L.

Brake. Bracken.

On shrubby hillsides, borders of fields and roads and in open woods. Common. July-September.

Polypodium vulgare L.

Common polypody

On rocks and rocky banks. Common. Found occasionally in swamps on trunks of trees. June-October.

EQUISETACEAE

Equisetum arvense L.

Field horsetail

Along railways and roadsides. Common. May.

Equisetum sylvaticum L.

Wood horsetail

Moist woods. Common. May.

Equisetum fluviatile L.

E. limosum L.

Swamp horsetail

River shores. Common. May-June.

Equisetum hyemale L.

Scouring rush

Wet places and on banks. Frequent. May-June.

LYCOPODIACEAE

Lycopodium lucidulum Michx.

Shining club moss

In damp hemlock woods. Common. August-October.

Lycopodium obscurum L.

Ground pine

Moist woods. Common. July-September.

Lycopodium annotinum L.

Stiff club moss

In a thicket near Apalachin. Rare. September-November.

Lycopodium clavatum L.

Running pine. Club moss

Found in thickets, open woods and along bushy roadsides. Common. August-October.

Lycopodium complanatum L.

Trailing Christmas green

Thickets, open woods, specially in groves of young coniferous trees. Common. Autumn.

Lycopodium chamaecyparissus A. Br.

Found with the last and generally considered a variety of that species. Professor Underwood makes it a distinct species in his work, *Our Native Ferns*. Autumn.

ISOETACEAE

Isoetes engelmanni A. Br.

Engelmann's quillwort

Frequent along the Susquehanna at Apalachin. August.

Isoetes engelmanni gracilis Engelm.

Found with the last. August.

SPERMATOPHYTA

Seed-bearing plants

PINACEAE

Pinus strobus L.

White pine

Very common. Formerly this was the principal forest tree of this region, but now it occurs chiefly as a small tree, though, scattered here and there, specimens of primeval trees are still found.

Pinus resinosa Ait.

Red pine. Canadian pine

Very rare. A single specimen was observed near Barton in 1897. According to old settlers it was formerly quite frequent. June.

Pinus rigida Mill.

Pitch pine

Common. A much smaller tree than the white pine and less valuable. May.

Tsuga canadensis (L.) Carr.

Hemlock

Common. The young trees are the most graceful of evergreens. May.

Taxus minor (Michx.) Britton

T. canadensis Willd.

Ground hemlock. American yew

Moist, shaded banks and along streams. Frequent. Abundant near Apalachin and at the Delaware, Lackawanna and Western narrows west of Owego. Sometimes mistaken for a juniper. May.

TYPHACEAE

Typha latifolia L.

Broad-leaved cattail

Swamps. Abundant. June.

SPARGANIACEAE

Sparganium eurycarpum Engelm.

Broad-fruited bur reed

Marshes and borders of streams. Common. May-August.

Sparganium simplex Huds.

Simple-stemmed bur reed

The same situations as the last, but less frequent. June-August.

NAIADACEAE

Potamogeton natans L.

Common floating pondweed

Ponds and slow streams. Common. July-August.

Potamogeton nuttallii Cham. & Sch.

P. pennsylvanicus Cham.

Nuttall's pondweed

Ponds and streams. Common. July-August.

Potamogeton lonchites Tuckerm.

P. fluitans Roth

Long-leaved pondweed

In the river. Frequent. July-October.

Potamogeton perfoliatus L.

Clasping-leaved pondweed

In the river. Frequent. July-September.

Potamogeton crispus L.

Curled-leaved pondweed

In the river. Infrequent. August.

Potamogeton zosteraefolius Schum.

Eelgrass pondweed

In the river. Frequent. July-August.

Potamogeton pectinatus L.

Fennel-leaved pondweed

In the river. Common. July-August.

Zannichellia palustris L.

Zannichellia

The Susquehanna river. Infrequent. July-September.

Naias flexilis (Willd.) Rost. & Schmidt.

Slender naias

Frequent in the river. Summer.

ALISMACEAE

Alisma plantago-aquatica L.

Water plantain

Swamps, low grounds and along streams. Common. Summer.

Sagittaria latifolia Willd.

S. variabilis Engelm.

Broad-leaved arrowhead

In wet ground or shallow water. Common. Summer.

Sagittaria rigida Pursh

S. heterophylla Pursh

Sessile-fruiting arrowhead

Along the border of the river. Frequent. Generally found in shallow water. July-September.

Sagittaria graminea Michx.

Grass-leaved arrowhead

Shallow water along the Susquehanna. Frequent. Abundant at Apalachin. July-September.

VALLISNERIACEAE

Philotria canadensis (Mich.) Britton

Elodea canadensis Michx.

Ditch moss

Ponds and streams. Common. May-August.

Vallisneria spiralis L.

Eelgrass

Common in the river. Summer.

GRAMINEAE

Andropogon scoparius Michx.

Little blue stem. Broom beard grass

Dry banks along the river. Common. August-September.

Andropogon furcatus Muhl.

Big blue stem. Forked bearded grass

Dry banks along the river. Common. This grass has a very wide range east of the Rocky mountains. It is very abundant in the Missouri region, and is highly prized for hay. August-September.

Chrysopogon avenaceus (Michx.) Benth.

Indian grass

Found with the two preceding species but less common. A grass of wide distribution and specially abundant in South Dakota, where it is highly valued as a hay-producing species. August-September.

Syntherisma sanguinalis (L.) Nash

Panicum sanguinale L.

Large crab grass

Cultivated ground. Common. A grass of no agricultural value in the north, but in the south it is frequently cut for hay. July-August.

Syntherisma linearis (Krock.) Nash

Panicum glabrum Gaud.

Small crab grass

Cultivated fields. Common. July-September.

Panicum crus-galli L.

Barnyard grass

Cultivated soil and along streams. Common. A coarse, succulent grass and valuable forage plant for the silo. Autumn.

Panicum agrostidiforme Lam.

P. agrostoides Muhl.

Agrostis-like panicum

Wet, gravelly shores along the river. Frequent. July-September.

Panicum porterianum Nash

P. latifolium L.

Porter's panicum

Open woods and thickets. Frequent. June-July.

Panicum commutatum Schultes

Variable panicum

Dry bank. Apalachin. Rare. June-July.

Panicum macrocarpon Le Conte

Large-fruited panicum

Open woods and thickets. Common. July.

Panicum clandestinum L.

Hispid panicum

On the banks of the river and along streams. Common. June-July.

Panicum xanthophysum Gray

Slender panicum

Dry bank 2 miles east of Campville. Rare. June-July.

Panicum dichotomum L.

Forked panicum

Thickets both dry and wet. Common. June-July.

Panicum pubescens Lam.

Hairy panicum

Fields and thickets. Abundant. June-August.

Panicum depauperatum Muhl.

Starved panicum

Dry banks. Frequent. June-September.

Panicum linearifolium Scribn.

Linear-leaved panicum

Dry banks. Common. This species is more plentiful than the last, which it closely resembles. June-August.

Panicum virgatum L.

Tall smooth panicum. Switch grass

Along the river. Common. August-September.

Panicum miliaceum L.

Millet

A cultivated grass which frequently escapes. July.

Panicum proliferum Lam.

Spreading panicum

River shore. Frequent. Abundant in some places. August.

Panicum capillare L.

Witch grass

Cultivated grounds, woods, fields and along streams. Common. Summer.

Ixophorus viridis (L.) Nash

Setaria viridis Beauv.

Green foxtail

Cultivated fields. Common. July-September.

Ixophorus glaucus (L.) Nash

Setaria glauca Beauv.

Yellow foxtail. Pigeon grass

Fields and roadsides. Common. July-September.

Ixophorus italicus (L.) Nash

Setaria italica Kunth

Italian millet. Hungarian grass

Waste places. Infrequent. This species together with I. germanicus is found in cultivation throughout. August.

Homalocenchrus virginicus (Willd.) Britton

Leersia virginica Willd.

White grass

Damp, shaded places. Common. August-September.

Homalocenchrus oryzoides (L.) Poll.

Leersia oryzoides Sw.

Rice cut grass

Marshes and wet places along streams. Common. August-September.

Phalaris arundinacea L.

Reed canary grass

Borders of ponds and streams. Infrequent. July-August.

Phalaris canariensis L.

Canary grass

Waste places. Infrequent. Does not persist long. August.

Anthoxanthum odoratum L.

Sweet vernal grass

Roadsides and pastures. Frequent. June-July.

Aristida dichotoma Michx.

Poverty grass

In poor, thin soil at Apalachin. September.

Oryzopsis asperifolia Michx.

White-grained mountain rice

Upland woods. Frequent. May.

Oryzopsis melanocarpa Muhl.

Black mountain rice

Rocky hillsides in woods west of Barton. Plentiful. August.

Milium effusum L.

Wild millet

Damp woods. Infrequent. June-July.

Muhlenbergia mexicana (L.) Trin.

Mexican drop seed

Low grounds. Common. August-September.

Muhlenbergia racemosa (Michx.) B. S. P.

M. glomerata Trin.

Marsh muhlenbergia

Dry, stony bank at Apalachin. Apparently not found in our swamps. September.

Muhlenbergia sylvatica Torr.

Woodland drop seed

Banks of the river and along streams. Common. September.

Muhlenbergia tenuiflora (Willd.) B. S. P.

M. willdenovii Trin.

Slender-flowered drop seed

Dry thicket near Apalachin. Plentiful. August-September.

Muhlenbergia diffusa Schreb.

Nimble will

Woods and roadsides. Frequent. Found also in shady lawns. September.

Brachyelytrum erectum (Schreb.) Beauv.

B. aristatum R. & S.

Brachyelytrum

Moist woods. Common. July-August.

Phleum pratense L.

Timothy. Herd's grass

Fields and waysides. Abundant.

Alopecurus geniculatus L.

A. geniculatus var. aristulatus Torr.

Marsh foxtail

Marshland swamp and along streams at Apalachin. Frequent. This grass is said to make a beautiful lawn, remaining green throughout the winter. July-August.

Alopecurus pratensis L.

Meadow foxtail

Meadow lands at Apalachin. Infrequent. An excellent pasture grass. June-July.

Sporobolus vaginaeflorus (Torr.) Wood

Sheathed rush grass

Roadside in poor soil. Common. September.

Cinna arundinacea L.

Wood reed grass

Borders of ponds and streams. Common. Found also in swamps. August-September.

Cinna latifolia (Trev.) Griseb.

C. pendula Trin.

Slender wood reed grass

Damp woods and borders of ponds and streams. Frequent. August-September.

Agrostis alba L.

Redtop

Grass lands. Common. July-August.

Agrostis vulgaris With.

Redtop. Herd's grass

Meadows, fields and pastures. Common. July-August.

Agrostis stolonifera L.

Creeping bent grass

Damp shores and pasture lands. Frequent. This and the preceding one are regarded by some as only varieties of Agrostis alba. July-August.

Agrostis perennans (Walt.) Tuckerm.

Thin grass

Shaded places. Common. July-August.

Agrostis hyemalis (Walt.) B. S. P.

A. scabra Willd.

Rough hair grass

Damp shaded places. Common. July-August.

Calamagrostis canadensis (Michx.) Beauv.

Blue joint grass

River banks. Common. Found at Apalachin on a hilltop. August.

Calamagrostis cinnoides (Muhl.) Scribn.

C. nuttalliana Steud.

Nuttall's reed grass

Two miles east of Campville. Rare. August.

Holcus lanatus L.

Velvet grass. Meadow soft grass

Meadows and pasture lands. Frequent. June-August.

Deschampsia caespitosa (L.) Beauv.

Tufted hair grass

River shore. Infrequent. Near Campville. August.

Deschampsia flexuosa (L.) Trin.

Wavy hair grass

River bank at Apalachin. Infrequent. July-August.

Avena striata Michx.

Purple oat

Damp woods. Infrequent. Woods at Mutton hill pond. July.

Arrhenatherum elatius (L.) Beauv.

Oat grass

Meadows and pastures at Apalachin. Frequent. Cultivated for hay. June-August.

Danthonia spicata (L.) Beauv.

Wild oat grass

Dry, sterile soil. Common. A form of this grass with the leaves and lower sheaths clothed with long, soft hairs is frequent in dry thickets. July-August.

Danthonia compressa Austin

Flattened wild oat grass

Woods and shaded places. Frequent. August.

Spartina cynosuroides (L.) Willd.

Fresh-water cord grass

River shores. Infrequent. August-September.

Eragrostis capillaris (L.) Nees

Capillary eragrostis

Dry banks and meadows. Frequent. Campville flats.

Eragrostis frankii Steud.

Frank's eragrostis

River shores. Infrequent. Abundant in an old gravel pit near Apalachin. September.

Eragrostis pilosa (L.) Beauv.

Tufted eragrostis

Roadsides in poor soil. Common. August.

Eragrostis purshii Schrad.

Pursh's eragrostis

Plentiful at a sand bank at Apalachin and along roadsides. August-September.

Eragrostis pectinacea (Michx.) Steud.

Purple eragrostis

Meadows at Apalachin. Rare. A beautiful species. August.

Eragrostis hypnoides (Lam.) B. S. P.

E. reptans Nees

Creeping eragrostis

Along the river and in wet places. Common. August.

Eatonia pennsylvanica (DC.) Gray

Eaton's grass

Moist thickets and swamps. Frequent. July.

Eatonia nitida (Spreng.) Nash

E. dudleyi Vasey.

Slender eatonia

Frequent on wooded banks at Apalachin. May-June.

Koeleria cristata (L.) Pers.

Koeleria

Dry bank near Campville. Infrequent. A western species which reaches its eastern limit with us. August.

Dactylis glomerata L.

Orchard grass

Grass lands. Common. June-July.

Cynosurus cristatus L.

Dog-tail grass

Plentiful in a pasture at Campville. Adventive from Europe. July.

Poa annua L.

Low spear grass

Dooryards, lawns and waste places. Common. May-October.

Poa compressa L.

English blue grass. Wire grass

Meadows and other grass lands. Common. A slender form is found in woods. June-July.

Poa pratensis L.

Kentucky blue grass. June grass

In all meadows and pastures. The most common of our grasses. June-July.

Poa trivialis L.

Roughish meadow grass

Plentiful in swamps and wet places at Apalachin. July.

Poa flava L.

P. serotina Ehrh.

False redtop. Fowl meadow grass

Low meadows and along streams. Common. July-August.

Poa debilis Torr.

Weak spear grass

Woods and thickets. Frequent. May-June.

Poa alsodes Gray

Grove meadow grass

Wet woods. Infrequent. May-June.

Panicularia laxa Scribn.

Northern manna grass

Swamps at Apalachin. Infrequent. August.

Panicularia canadensis (Michx.) Kuntze

Glyceria canadensis Trin.

Rattlesnake grass

Swamps. Common. July-August.

Panicularia nervata (Willd.) Kuntze

Glyceria nervata Trin.

Nerved manna grass

Swamps, woods and damp places. Common. June-September.

Panicularia americana (Torr.) MacM.

Glyceria grandis Wats.

Tall manna grass

Swamps and along streams. Frequent. July-August.

Panicularia pallida (Torr.) Kuntze

Glyceria pallida Trin.

Pale manna grass

Marshland swamp and swamp east of Campville. Frequent. July-August.

Panicularia fluitans (L.) Kuntze

Glyceria fluitans R. Br.

Floating manna grass

Marshland swamp and swamp east of Campville. Frequent July-August.

Panicularia borealis Nash

Northern manna grass

Marshland swamp. Frequent. Apparently a slender form of the preceding species. July-August.

Panicularia acutiflora (Torr.) Kuntze

Glyceria acutiflora Torr.

Sharp-scaled manna grass

Marshland swamp and swamp east of Campville. Infrequent. June-August.

Festuca ovina L.

Sheep's fescue

Plentiful in pastures and at Campville. June.

Festuca ovina duriuscula (L.) Hack.

Hard fescue

Banks of the river. Frequent. July.

Festuca elatior L.

Tall fescue

Grass lands. Common. A valuable grass either for mowing or for pasture. July-August.

Festuca nutans Willd.

Nodding fescue

Damp woods. Frequent. July.

Bromus ciliatus L.

Wood chess

Low woods and banks of streams. Common. July-August.

Bromus pubescens Muhl.

B. ciliatus purgans (L.) Gray

Soft chess

Thicket near Apalachin. July. Distinct from the last both in appearance and habitat.

Bromus kalmii Gray

Kalm's chess

In rocky woods. Frequent. July-August.

Bromus secalinus L.

Cheat. Chess

Frequent in wheat fields. June-August.

Bromus racemosus L.

Upright chess

In fields and along railways. Frequent. July-August.

Lolium perenne L.

Rye grass

Pasture land at Campville. Frequent. July.

Lolium italicum A. Br.

Italian rye grass

Meadow lands at the Marshland farm. Frequent. A much coarser grass than the last. July.

Agropyron repens (L.) Beauv.

Quack grass

Grass lands, specially around barns and dwellings. Common. July-September.

Agropyron caninum (L.) R. & S.

Awned wheat grass

Open woods and thickets and along their borders. Frequent. July.

Hordeum jubatum L.

Squirrel tail grass

Along the Delaware, Lackawanna and Western Railroad and in gardens, as a weed, at Apalachin. Infrequent. July.

Elymus striatus Willd.

Slender wild rye

River banks in shade. Common. June.

Elymus virginicus L.

Terrell grass

River banks. Common. July-August.

Elymus canadensis L.

Nodding wild rye

River banks. Abundant. July-August.

Elymus canadensis glaucifolius (Willd.) Torr.

Glaucous wild rye

With the preceding species and evidently only a glaucous form of it. July-August.

Hystrix hystrix (L.) Millsp.

Asprella hystrix Willd.

Bottle brush grass

In rocky woods and along streams. Frequent. Spikelets easily detached. July.

CYPERACEAE

Cyperus diandrus Torr.

Low cyperus

Along streams in wet soil. Frequent. August-September.

Cyperus rivularis Kunth

Shining cyperus

In wet soil, specially along Apalachin creek. Frequent. August-September.

Cyperus inflexus Muhl.

C. aristatus Rottb.

Awned cyperus

In wet soil along the river shores. Infrequent. August.

Cyperus esculentus L.

Yellow nut grass

Along streams and in damp fields. Common. In some places a troublesome weed. August-October.

Cyperus strigosus L.

Straw-colored cyperus

In moist meadows or along streams. Common. A species presenting numerous forms. August-October.

Dulichium arundinaceum (L.) Britton.

D. spathaceum Pers.

Dulichium

Swamps. Very common. August-October.

Eleocharis ovata (Roth) R. & S.

Ovoid spike rush

Swamps and in all wet soil. Common. July-September.

Eleocharis acicularis (L.) R. & S.

Needle spike rush

In wet soil. Common. July-September.

Stenophyllus capillaris (L.) Britton

Fimbristylis capillaris Gray

Hairlike stenophyllus

Campville river flats. Frequent. August.

Scirpus planifolius Muhl.

Wood club rush

In dry woods and thickets. Frequent. May-June.

Scirpus americanus Pers.

S. pungens Vahl

Chair-maker's rush

On the river shores. Frequent. Abundant at Apalachin. August.

Scirpus torreyi Olney

Torrey's bulrush

Plentiful at Mutton hill pond in the outlet. August.

Scirpus lacustris L.

Great bulrush. May rush

In shallow water along the river. Common. August.

Scirpus atrovirens Muhl.

Dark green bulrush

Swamps and wet places. Common. July.

Scirpus polyphyllus Vahl

Leafy bulrush

Wet woods and along streams. Frequent. August.

Scirpus cyperinus (L.) Kunth

Eriophorum cyperinum L.

Wool grass

In all swamps and other wet places. Abundant. August-September.

Scirpus cyperinus eriophorum (Michx.) Britton

Eriophorum cyperinum var. laxum Gray

With the type. Common. Spikelets mostly peduncled. August-September.

Eriophorum polystachyon L.

Tall cotton grass

Mutton hill pond. Rare. June-August.

Eriophorum virginicum L.

Virginia cotton grass

Common in bogs. A form is found at Barton, which approaches the var. album Gray. July-September.

Rynchospora alba (L.) Vahl

White beaked rush

On bogs at Mutton hill pond. Common. July.

Carex intumescens Rudge

Bladder sedge

In wet woods, bogs and swamps. Common. June-July.

Carex asa-grayi Bailey

C. grayi Carey

Gray's sedge

Plentiful in a small swamp at Barton. July.

Carex lupulina Muhl.

Hop sedge

Swamps. Common. July.

Carex lupulina bella-villa (Dewey) Bailey

Swamp east of Campville. Infrequent. July.

Carex utriculata Boott

Bottle sedge

Abundant at the Marshland swamp. June-July.

Carex monile Tuckerm.

Necklace sedge

Swamps. Common. July.

Carex tuckermani Dewey

Tuckerman's sedge

In swamps, bogs and wet meadows. Common. June-July.

Carex retrorsa Schwein.

Retrorse sedge

Swamps. Infrequent. June-July.

Carex lurida Wahl.

Sallow sedge

Swamps and low grounds. Abundant. June-July.

Carex baileyi Britton

C. lurida var. gracilis Bailey

Bailey's sedge

Swamp near Campville. Infrequent. July.

Carex hystricina Muhl.

Porcupine sedge

Swamps. Infrequent. June-July.

Carex pseudo-cyperus L.

Cyperuslike sedge

Swamp east of Campville. Rare. July-August.

Carex comosa Boott

C. pseudo-cyperus var. americana Hochst.

Bristly sedge

Swamps. Common. July-August.

Carex trichocarpa Muhl.

Hairy-fruited sedge

Along the river banks. Abundant. Found also in swamps. June-July.

Carex riparia Curtis

River bank sedge

Abundant at the Marshland swamp. June.

Carex scabrata Schwein.

Rough sedge

In wet, shaded places. Common. June-July.

Carex lanuginosa Michx.

C. filiformis var. latifolia Boeckl.

Woolly sedge

Mutton hill pond. Infrequent. June.

Carex filiformis L.

Slender sedge

Frequent in all swamps in the vicinity of Apalachin. June-July.

Carex stricta Lam.

Tussock sedge

Along the river and on the edges of swamps. Common. May-June.

Carex torta Boott

Twisted sedge

On banks of streams. Frequent. June.

Carex prasina Wahl.

Drooping sedge

Plentiful at Mutton hill pond. May-July.

Carex crinita Lam.

Fringed sedge

Swamps, wet places and ditches. Frequent. June-July.

Carex gynandra Schwein.

Nodding sedge

Found in the same situations as C. crinita, but much more common. June-July.

Carex virescens Muhl.

Downy green sedge

In grassy places. Infrequent. June.

Carex triceps Michx.

C. triceps var. hirsuta Bailey

Hirsute sedge

On dry knolls. Frequent. June.

Carex gracillima Schwein.

Graceful sedge

In moist woodlands. Common. June.

Carex longirostis Torr.

Long-beaked sedge

Plentiful in thickets along the river banks at Barton. May-June.

Carex arctata Boott

Drooping wood sedge

In open woods. Infrequent. May-June.

Carex tenuis Rudge

C. debilis var. rudgei Bailey

Slender-stalked sedge

Low woods. Common. June-July.

Carex grisea Wahl.

Gray sedge

In shaded places. Common. June.

Carex amphibola Steud.

Narrow-leaved sedge

River bank at Apalachin. Infrequent. Verified by Dr Thomas C. Porter. June.

Carex granularis Muhl.

Meadow sedge

Moist ground in meadows. Infrequent. June.

Carex pallescens L.

Pale sedge

In fields and along roadsides at Apalachin. June.

Carex laxiflora Lam.

Loose-flowered sedge

Woods, ravines and open places. Common. May-June.

Carex laxiflora blanda (Dewey) Boott

Woods and fields. Frequent. May-June.

Carex laxiflora varians Bailey

Found with the type. Frequent. May-June.

Carex laxiflora patulifolia (Dewey) Carey

In ravines and damp shades. Common. May-June.

Carex styloflexa Buckley

C. laxiflora var. styloflexa Boott

Bent sedge

Damp soil at Barton. Rare. June.

Carex digitalis Willd.

Slender wood sedge

Open woods and thickets. Infrequent. June.

Carex albursina Sheldon

C. laxiflora var. latifolia Boott

White bear sedge

Rich, moist soil in woods, specially in shaded ravines. Frequent. June.

Carex plantaginea Lam.

Plantain-leaved sedge

Shaded banks and open woods. Infrequent. Near Owego. May-June.

Carex laxiculmis Schwein.

Spreading sedge

In woods and coppices. Frequent. June.

Carex pedunculata Muhl.

Long-stalked sedge

Plentiful in a damp thicket at Barton. May-June.

Carex pedicellata (Dewey) Britton

C. communis Bailey

Fibrous-rooted sedge

Dry banks in open thickets. Common. May-June.

Carex pennsylvanica Lam.

Pennsylvania sedge

Dry soil in woods, thickets and open places. Very common. May-June.

Carex varia Muhl.

Emmons sedge

On hilltops in either dry or damp woods at Apalachin. Infrequent. May-June.

Carex pubescens Muhl.

Pubescent sedge

Open woods at Barton. Infrequent. June.

Carex leptalea Muhl.

C. polytrichoides Muhl.

Bristle-stalked sedge

Swamps. Common. June.

Carex stipata Muhl.

Awl-fruited sedge

Swampy fields. Very common. June.

Carex vulpinoidea Michx.

Fox sedge.

Swamps, ditches and fields. Very common. June.

Carex xanthocarpa Bicknell

Yellow-fruited sedge

In dry fields at Apalachin. Common. Easily distinguished from C. vulpinoidea by its bright yellow,. plano-convex perigynia. June.

Carex tenella Schk.

Soft-leaved sedge

Swamp north of Campville. June.

Carex rosea Schk.

Stellate sedge

Woods and open places. Common. June.

Carex rosea radiata Dewey

With the type. June.

Carex retroflexa Muhl.

C. rosea var. retroflexa Torr.

Reflexed sedge

Rich woods. Infrequent. June.

Carex muricata L.

Lesser prickly sedge

Dry bank at Apalachin. Introduced from Europe. June.

Carex sparganioides Muhl.

Bur reed sedge

Shaded places, wet or dry. Common. June-July.

Carex cephaloidea Dewey

Thin-leaved sedge

Moist places in woods and fields. Frequent. June-July.

Carex cephalophora Muhl.

Oval-headed sedge

Dry knolls and open woodland. Common. June.

Carex muhlenbergii Schk.

Muhlenberg's sedge

Dry bank at Apalachin. Rare. June.

Carex sterilis Willd.

C. echinata var. microstachys Boeckl.

Little prickly sedge

Bogs. Mutton hill pond. Frequent. May-June.

Carex sterilis cephalantha Bailey

C. echinata var. cephalantha Bailey

With the type at Mutton hill pond. May-June.

Carex canescens L.

Silvery sedge

Plentiful at Mutton hill pond. May-June.

Carex trisperma Dewey

Three-fruited sedge

Swamps near Barton and Campville. June-August.

Carex deweyana Schwein.

Dewey's sedge

Dry, open woods. Common. June.

Carex bromoides Schk.

Broomlike sedge

Shaded swamps and wet woodlands. Common. June.

Carex tribuloides Wahl.

Blunt broom sedge

Low moist ground, swamps and swales. Common. July.

Carex tribuloides bebbii Bailey

Wet places. Occasional. July.

Carex scoparia Schk.

Pointed broom sedge

Common in open fields and ditches. July.

Carex scoparia minor Boott

Dry woods. Barton. June.

Carex cristatella Britton

C. tribuloides var. cristata Bailey

Crested sedge

Plentiful in fields at Apalachin. July-September.

Carex foenea Willd.

Hay sedge

Dry banks at Apalachin. Rare. June-July.

Carex straminea Willd.

Straw sedge

Coppices and open fields. Frequent. June-July.

Carex festucacea Willd.

C. straminea var. brevior Dewey

Fescue sedge

In a dry thicket on a hilltop near Apalachin. Rare. June.

ARACEAE

Arisaema triphyllum (L.) Torr.

Indian turnip. Jack-in-the-pulpit

Rich moist woodlands and ravines. Common. The corm, when fresh, is very acrid. June.

Arisaema dracontium (L.) Schott

Green dragon

Shaded alluvial soil along the river. Frequent. June.

Calla palustris L.

Water arum. Wild calla

Swamps. Common. Generally found growing in water. May-June.

Spathyema foetida (L.) Raf.

Symplocarpus foetidus Nutt.

Skunk cabbage

Alluvial soil along the river and its branches. Common. March-April.

Acorus calamus L.

Sweet flag

Wet places, specially near dwellings. Frequent. June.

LEMNACEAE

Spirodela polyrhiza (L.) Schleid.

Great duckweed

Stagnant pools and water holes. Common. Summer.

Lemna minor L.

Small duckweed

With the last but less common. Summer.

PONTEDERIACEAE

Heteranthera dubia (Jacq.) MacM.

H. graminea Vahl

Water star grass

In shallow water along the river. Common. August.

JUNCACEAE

Juncus effusus L.

Soft rush

Wet places. Common. Summer.

Juncus bufonius L.

Toad rush

Roadsides. Common. Summer.

Juncus tenuis Willd.

Yard rush

Along paths and waysides. Common. Summer.

Juncus nodosus L.

Knotted rush

River shores and damp places. Common. Summer.

Juncus canadensis J. Gay

J. canadensis var. longicaudatus Engelm.

Canada rush

Wet places. Mutton hill pond and Marshland swamp. Summer.

Juncus canadensis brevicaudatus Engelm.

J. canadensis var. coarctatus Engelm.

Narrow-panicled rush

Juncus acuminatus Michx.

Sharp-fruited rush

Marshes and ditches. Common. Summer.

Juncoides pilosum (L.) Kuntze

Luzula vernalis DC.

Hairy wood rush

Damp woods and bushy places. Common. May.

Juncoides campestre (L.) Kuntze

Luzula campestris DC.

Common wood rush

Dry soil in pastures and clearings. Common. April-May.

MELANTHACEAE

Chamaelirium luteum (L.) Gray

C. carolinianum Willd.

Blazing star

Woods and thickets, wet or dry. Frequent. June.

Veratrum viride Ait.

Hellebore. Indian poke

Alluvial soil along the river and other streams. Common. June.

Uvularia perfoliata L.

Perfoliate bellwort

Rich woods and coppices. Common. May.

Uvularia grandiflora J. E. Smith

Large-flowered bellwort

Woods and thickets. Frequent. Plentiful at Barton. May.

Uvularia sessilifolia L.

Oakesia sessilifolia Wats.

Sessile-leaved bellwort

Low woods and ravines. Common. May.

LILIACEAE

Hemerocallis fulva L.

Day lily

Escaped from cultivation and established by roadsides. June August.

Allium tricoccum Ait.

Wild leek

Alluvial soil along the river. Common. July.

Allium cernuum Roth

Nodding wild onion

High banks of the river and rocky places. Frequent. Barton. July.

Allium canadense L.

Meadow garlic

Thickets along the river. Frequent. May.

Lilium philadelphicum L.

Wood lily

Dry woods and thickets. Frequent. June.

Lilium canadense L.

Canada lily

River banks. Frequent. June-July.

Lilium superbum L.

Turk's cap lily

River banks. Abundant at Apalachin. July-August.

Erythronium americanum Ker

Yellow adder's-tongue

Damp woods and pastures, specially along streams. Common. April-May.

Ornithogalum umbellatum L.

Star of Bethlehem

Escapes from cultivation. Occasional. May.

Muscari botryoides (L.) Mill.

Occasionally escapes from cultivation. Roadside at Owego. April.

CONVALLARIACEAE

Asparagus officinalis L.

Asparagus

Fields and roadsides. Infrequent. May-October.

Clintonia borealis (Ait.) Raf.

Yellow clintonia

Cool, damp woods. Frequent. May-June.

Vagnera racemosa (L.) Morong

Smilacina racemosa Desf.

False Solomon's seal

Woods, ravines and river banks. Common. May.

Unifolium canadense (Desf.) Greene

Maianthemum canadense Desf.

False lily of the valley

Damp woods and thickets. Common. May-June.

Streptopus roseus Michx.

Sessile-leaved twisted stalk

Cool, damp woods. May-June.

Polygonatum biflorum (Walt.) Ell.

Hairy Solomon's seal

Woods, fence rows and river banks. Common. May.

Polygonatum commutatum (R. & S.) Dietr.

P. giganteum Dietr.

Smooth Solomon's seal

River banks. Common. June. The young shoots are used as a substitute for asparagus.

Medeola virginiana L.

Indian cucumber root

Rich, moist woods. Common. May-June.

Trillium grandiflorum (Michx.) Salisb.

Large-flowered wake-robin

Woods and river banks. Common. May.

Trillium erectum L.

Ill scented wake-robin

Rich woods, ravines and river banks. Common. May.

Trillium undulatum Willd.

T. erythrocarpum Michx.

Painted wake-robin

Cool, damp woods. Infrequent. Apalachin. June.

SMILACEAE

Smilax herbacea L.

Carrion flower

Woods, fence rows and banks of streams. Frequent. June.

Smilax hispida Muhl.

Hispid green brier

Thickets. Frequent. June.

AMARYLLIDACEAE

Hypoxis hirsuta (L.) Coville

H. erecta L.

Star grass

Dry woods. Frequent. May-October.

DIOSCOREACEAE

Dioscorea villosa L.

Wild yam root

Thickets along the river. Frequent. Apalachin. June-July.

IRIDACEAE

Iris versicolor L.

Larger blue flag

Swamps and shores. Common. May-July.

Sisyrinchium graminoides Bickn.

S. anceps Cav.

Stout blue-eyed grass

Grassy places. Frequent. June.

Sisyrinchium angustifolium Mill.

Pointed blue-eyed grass

Meadows and pastures. Common. May-August.

ORCHIDACEAE

Cypripedium acaule Ait.

Stemless lady's slipper

Woods, specially on the site of decayed logs. Frequent. May-June.

Cypripedium hirsutum Mill.

C. pubescens Willd.

Large yellow lady's slipper

Wet woods and swamps. Infrequent. June.

Cypripedium parviflorum Salisb.

Small yellow lady's slipper

Wet or dry woods. Common. June.

Orchis spectabilis L.

Showy orchis

Damp woods. Tioga Center. Rare. May.

Habenaria orbiculata (Pursh) Torr.

Large round-leaved orchis

Rich woods. Barton. Infrequent. July.

Habenaria hookeriana Gray

Hooker's orchis

Damp woods. Barton. Infrequent. June.

Habenaria clavellata (Michx.) Spreng.

H. tridentata Hook.

Small green wood orchis

Swamps near Barton. Infrequent. August.

Habenaria lacera (Michx.) R. Br.

Ragged orchis

Swamps. Apalachin. Frequent. July.

Habenaria psycodes (L.) Gray

Purple-fringed orchis

Damp woods. Common. July-August.

Pogonia ophioglossoides (L.) Ker

Rose pogonia

Mutton hill pond and bogs north of Barton. July.

Gyrostachys cernua (L.) Kuntze

Spiranthes cernua Rich.

Nodding ladies' tresses

Damp open places. Common. September.

Gyrostachys gracilis (Bigel.) Kuntze

Spiranthes gracilis Bigel.

Slender ladies' tresses

Dry thickets and specially in pine groves. Infrequent. Apalachin. August.

Peramium repens (L.) Salisb.

Goodyera repens R. Br.

Small rattlesnake plantain

Evergreen woods. Infrequent. July-August.

Peramium repens ophioides Fern.

With the type but more frequent. July-August.

Peramium pubescens (Willd.) MacM.

Goodyera pubescens R. Br.

Downy rattlesnake plantain

Woods, usually under evergreens. Frequent. July-August.

Leptorchis loeselii (L.) MacM.

Liparis loeselii Richards.

Fen orchis

Damp places. Barton and Apalachin. Rare. June.

Corallorhiza odontorhiza (Willd.) Nutt.

Small-flowered coral root

Woods and thickets. Infrequent. August-September.

Corallorhiza multiflora Nutt.

Large coral root

Woods and thickets. Frequent. August.

Limodorum tuberosum L.

Calopogon pulchellus R. Br.

Grass pink. Calopogon

Bogs north of Barton. July.

JUGLANDACEA

Juglans nigra L.

Black walnut

Banks of the river and along streams. Frequent. April-May.

Juglans cinerea L.

Butternut. White walnut

Banks of the river and along streams. Common. April-May.

Hicoria minima (Marsh.) Britton

Carya amara Nutt.

Bitternut

Borders of fields. Frequent. May-June. Nut with a thin shell and very bitter kernel.

Hicoria ovata (Mill.) Britton

Carya alba Nutt.

Shagbark. Shellbark hickory

Woods, thickets and fields. Common. May. The principal hickory nut of the market. A form with very large compressed nuts occurs near Apalachin.

Hicoria alba (L.) Britton

Carya tomentosa Nutt.

Mockernut. White-heart hickory

Fields and woods. Not common. Nut thick shelled, seed sweet.

Hicoria microcarpa (Nutt.) Britton

Carya microcarpa Nutt.

Small-fruited hickory

Frequent in fields and along their borders. May-June. Nut small, kernel sweet.

Hicoria glabra (Nutt.) Britton

Carya porcina Nutt.

Pignut

Infrequent. May-June. Nut pointed, thick shelled, kernel somewhat astringent.

MYRICACEAE

Comptonia peregrina (L.) Coulter

Myrica asplenifolia L.

Sweet fern

Thin sterile soil. Common. April-May.

SALICACEAE

Populus alba L.

White poplar

An introduced shade tree, which spreads freely by means of suckers.

Populus balsamifera candicans (Ait.) Gray

Balm of Gilead

River banks. Abundant in some places. April.

Populus grandidentata Michx.

Large-toothed aspen

Hillsides. Common. April.

Populus tremuloides Michx.

American aspen

Woods and thickets. Common. April.

Populus dilatata L.

Lombardy poplar

An introduced tree, frequent near the sites of deserted dwellings.

Salix nigra Marsh.

Black willow

Banks of the river, along streams and on the shores of ponds. Common. May.

Salix lucida Muhl.

Shining willow

Banks of streams. Frequent. May.

Salix fragilis L.

Crack willow. Brittle willow

River banks. Barton. Infrequent. May.

Salix alba vitellina (L.) Koch

White willow

Banks of streams. Common. May.

Salix fluviatilis Nutt.

S. longifolia Muhl.

Sandbar willow

Low land along the river. Frequent. April-May.

Salix bebbiana Sarg.

S. rostrata Richards.

Beaked willow

Swamps and wet places. Common. May.

Salix humilis Marsh.

Prairie willow

Dry hills. Frequent. April.

Salix tristis Ait.

Dwarf gray willow

Uplands. Frequent. March-April.

Salix discolor Muhl.

Pussy willow. Glaucous willow

Wet soil. Common. March-April.

Salix sericea Marsh.

Silky willow

Swamps. Common. May.

Salix cordata Muhl.

Heart-leaved willow

Abundant along the river and other streams and in wet places. April-May.

BETULACEAE

Carpinus caroliniana Walt.

Water beech

Damp woods and along streams. Common. May.

Ostrya virginiana (Mill.) Willd

O. virginica Willd.

Ironwood

Woods and thickets. Frequent. May.

Quercus rubra L.

Red oak

Woods. Common. June.

Quercus coccinea Wang.

Scarlet oak

Woods and thickets. Infrequent. May-June.

Quercus velutina Lam.

Q. coccinea var. tinctoria Gray

Black oak

Woods, thickets, fields and along fences. Common. May-June.

Quercus nana (Marsh.) Sarg.

Q. ilicifolia Wang.

Scrub oak

Hillsides. Common. May. Forming thickets near Campville.

Quercus alba L.

White oak

Common. This species, Q. rubra, Q. velutina, Q. prinus and Castanea dentata constitute the principal forest trees of the region.

Quercus macrocarpa Michx.

Bur oak

Common along the river at Barton. May-June.

Quercus platanoides (Lam.) Sudw.

Q. bicolor Willd.

Swamp white oak

Damp grounds. Apalachin. Rare, but formerly quite plentiful. May-June.

Quercus prinus L.

Rock oak

Upland woods. Common. May-June.

Quercus acuminata (Michx.) Sarg.

Q. muhlenbergii Engelm.

Chestnut oak. Yellow oak

Barton. Rare. May.

Quercus prinoides Willd.

Scrub chestnut oak

Hillsides. Frequent and even abundant in some places. May.

ULMACEAE

Ulmus americana L.

White elm. American elm

Low grounds. Common. April.

Ulmus racemosa Thomas

Rock elm

Woods and thickets. Frequent. March-April.

Ulmus fulva Michx.

Slippery elm

Along the river and creeks. Frequent. March-April.

Celtis occidentalis L.

Hackberry. Sugar tree

River banks. Scarce at Apalachin but more plentiful at Barton and in the western part of our range. April.

MORACEAE

Humulus lupulus L.

Hop

Abundant along the river banks. August.

Cannabis sativa L.

Hemp

Waste places. Occasional. August.

URTICACEAE

Urtica gracilis Ait.

Slender nettle

Fence rows. Common. June-July.

Urticastrum divaricatum (L.) Kuntze

Laportea canadensis Gaud.

Wood nettle

Moist, shaded places. Common. July-August.

Adicea pumila (L.) Raf.

Pilea pumila Gray

Richweed. Clearweed

Damp, shady places. Common. July-September.

Boehmeria cylindrica (L.) Willd.

False nettle

Wet soil. Common. July-September.

SANTALACEAE

Comandra umbellata (L.) Nutt.

Bastard toad flax

Dry thickets. Common. May-July.

ARISTOLOCHIACEAE

Asarum canadense L.

Wild ginger

Abundant in thickets along the river. May.

Asarum reflexum Bickn.

Short-lobed wild ginger

Plentiful in a deep ravine near Campville. Closely resembling A. canadense, and by some regarded as a form of that species. May.

POLYGONACEAE

Rumex acetosella L.

Sheep sorrel. Field sorrel

Everywhere common. Very abundant in newly seeded land. May-September.

Rumex verticillatus L.

Swamp dock

Swamps. Common. May-July.

Rumex britannica L.

Great water dock

Swamps. Frequent. July-August.

Rumex crispus L.

Curled dock

Waste places. Common. June-August.

Rumex sanguineus L.

Red-veined dock

Waste places. Infrequent. Apalachin. May-August.

Rumex obtusifolius L.

Bitter dock

Gardens and fields. Common. June-August.

Fagopyrum fagopyrum (L.) Karst.

F. esculentum Moench

Buckwheat

Frequently persists in fields. June-September.

Polygonum amphibium L.

Water persicaria

In water and along muddy shores. Common. July-August.

Polygonum emersum (Michx.) Britton

P. muhlenbergii Wats.

Swamp persicaria

Shores of the river. Common. July-September.

Polygonum pennsylvanicum L.

Pennsylvania persicaria

In moist, rich soil. Common. July-October.

Polygonum persicaria L.

Lady's thumb

Common everywhere. June-October.

Polygonum hydropiperoides Michx.

Mild water pepper

Along the river at Apalachin. Abundant in one station. June-September.

Polygonum hydropiper L.

Smartweed

Ditches and wet places. Common. July-September.

Polygonum punctatum Ell.

P. acre H. B. K.

Water smartweed

Shores of the river. Frequent. June-October.

Polygonum virginianum L.

Virginia knotweed

Damp thickets. Frequent. July-October.

Polygonum orientale L.

Prince's feather

Waste places. Escaped from cultivation. Infrequent. August-September.

Polygonum aviculare L.

Doorweed. Knotgrass

In dooryards and along footpaths. Common. June-November.

Polygonum erectum L.

Erect knotweed

Roadsides. Common. July-September.

Polygonum convolvulus L.

Black bindweed

Cultivated and waste grounds. Common. July-September.

Polygonum cilinode Michx.

Fringed black bindweed

Infrequent. West of Owego. June-September.

Polygonum scandens L.

Climbing false buckwheat

Banks of streams. Common. August-September.

Polygonum sagittatum L.

Arrow-leaved tear-thumb

Swamps and low grounds. Common. July-September.

Polygonum arifolium L.

Halberd-leaved tear-thumb

Marshes. Frequent. July-September.

CHENOPODIACEAE

Chenopodium album L.

Pigweed

Cultivated and waste grounds. Abundant. June-September.

Chenopodium album viride (L.) Moq.

With the type. Frequent. June-September.

Chenopodium glaucum L.

Oak-leaved goosefoot

Along the railroad at Apalachin. Infrequent. June-September.

Chenopodium hybridum L.

Maple-leaved goosefoot

Waste places. Infrequent. July-September.

Chenopodium botrys L.

Jerusalem oak

Waste places. Infrequent. Apalachin. July-September.

Atriplex hastata L.

A. patulum var. hastatum Gray

Halberd-leaved orache

Waste places. Infrequent. August-October.

AMARANTHACEAE

Amaranthus retroflexus L.

Rough pigweed

Gardens and waste places. Common. August-October.

Amaranthus hybridus L.

A. hypochondriacus L.

Slender pigweed

Waste places. Infrequent. Barton. August-October.

Amaranthus hybridus paniculatus (L.) U. & B.

A. paniculatus L.

Red amaranth

Waste places. Infrequent. August-October.

Amaranthus blitoides Wats.

Prostrate amaranth

Along railroads. Infrequent. Campville. June-October.

Amaranthus graecizans L.

A. albus L.

Tumbleweed

In waste and cultivated places. Common. June-September.

PHYTOLACCACEAE

Phytolacca decandra L.

Poke. Pigeonberry. Garget

Pastures and borders of woods, specially in newly cleared land. Frequent. July.

AIZOACEAE

Mollugo verticillata L.

Carpetweed

Cultivated ground, where it often forms dense mats. Common. Summer.

PORTULACACEAE

Claytonia virginica L.

Spring beauty

Moist woods and banks. Common. April-May.

Claytonia caroliniana Michx.

Carolina spring beauty

Damp woods. Infrequent. April-May.

Portulaca oleracea L.

Purslane. Pussly

Gardens and waste places. Common. Summer.

CARYOPHYLLACEAE

Agrostemma githago L.

Lychnis githago Scop.

Corn cockle

Frequent in wheat fields. July. The seeds are said to be very poisonous.

Silene stellata (L.) Ait.

Starry campion

Dry thickets. Common. June-July.

Silene vulgaris (Moench) Garcke

S. cucubalus Wibel

Bladder campion

Waste places. Infrequent. Barton. Summer.

Silene antirrhina L.

Sleepy catchfly

Along railroads and in waste places. Frequent. Summer.

Silene armeria L.

Sweet william

Spontaneous in gardens. July.

Silene noctiflora L.

Night-flowering catchfly

Waste places. Frequent. June-September.

Saponaria officinalis L.

Soapwort. Bouncing bet

Roadsides and along streams. Common. Summer.

Vaccaria vaccaria (L.) Britton

Saponaria vaccaria L.

Cow herb

Along the railroad at Apalachin. Rare. July.

Dianthus armeria L.

Deptford pink

Roadsides. Infrequent. Apalachin. Summer.

Dianthus barbatus L.

Sweet william

Roadsides and waste places. Common. Summer.

Alsine media L.

Stellaria media Smith

Common chickweed

Very common in damp grounds. March-April.

Alsine longifolia (Muhl.) Britton

Stellaria longifolia Muhl.

Long-leaved stitchwort

Moist, grassy places. Common. May-July.

Alsine graminea (L.) Britton

Stellaria graminea L.

Lesser stitchwort

In fields and along roadsides. Frequent. May-July.

Alsine borealis (Bigel.) Britton

Stellaria borealis Bigel.

Northern stitchwort

Along Apalachin creek. Rare. Summer.

Cerastium vulgatum L.

Mouse-ear chickweed

Roadsides, fields, coppices and waste places. Common. May-October.

Cerastium longipedunculatum Muhl.

C. nutans Raf.

Nodding chickweed. Powderhorn

River flats at Barton. Abundant. May-June.

Cerastium arvense L.

Field chickweed

Dry banks at Barton. Frequent. May-June.

Cerastium arvense oblongifolium (Torr.) H. & B.

With the last but more common. May-June.

Arenaria serpyllifolia L.

Thyme-leaved sandwort

Along railroads. Common. June.

Moehringia lateriflora (L.) Fenzl

Arenaria lateriflora L.

Blunt-leaved sandwort

Shaded places along the river. Frequent. June-July.

Spergula arvensis L.

Corn spurry

Common as a weed in cultivated soil. Summer.

Anychia canadensis (L.) B. S. P.

Slender forked chickweed

Dry woods. Frequent. June-August.

NYMPHAEACEAE

Brasenia purpurea (Michx.) Casp.

B. peltata Pursh

Water target

Mutton hill pond. Summer.

Nymphaea advena Soland.

Nuphar advena Ait. f.

Large yellow pond lily

Mutton hill pond. Summer.

Nymphaea kalmiana (Michx.) Sims

Nuphar kalmianum Ait.

Small yellow pond lily

Marshland swamp. Summer.

Castalia odorata (Dryand.) W. & W.

Nymphaea odorata Ait.

Sweet-scented white water lily

Mutton hill pond. Summer.

CERATOPHYLLACEAE

Ceratophyllum demersum L.

Hornwort

In the river. Frequent. June-July.

MAGNOLIACEAE

Magnolia acuminata L.

Cucumber tree

Frequent throughout the valley as a small tree, the larger trees having been cut for lumber. June.

Liriodendron tulipifera L.

Tulip tree. Whitewood

Rare. June. This tree has been nearly exterminated by the ax of the lumberman.

RANUNCULACEAE

Caltha palustris L.

Cowslip. Marsh marigold

Swamps and wet woodlands. Infrequent. May.

Coptis trifolia (L.) Salisb.

Gold thread

Damp, mossy woods. Common. May.

Actaea rubra (Ait.) Willd.

A. spicata var. rubra Ait.

Red baneberry

Woodlands. Frequent. May-June.

Actaea alba (L.) Mill.

White baneberry

Rich woods. Common. May.

Cimicifuga racemosa (L.) Nutt.

Black cohosh. Black snakeroot

Along the banks of the river, in thickets and borders of woods. Common. June-July.

Aquilegia canadensis L.

Wild columbine

Rocky woods and in meadows. Common. May-June.

Aquilegia vulgaris L.

European columbine

Escapes from cultivation and is frequent along roadsides. May-July.

Delphinium consolida L.

Field larkspur

Waste places about Apalachin. Summer. Naturalized from Europe.

Anemone virginiana L.

Tall anemone

River banks and borders of woods. Common. June-August.

Anemone cylindrica Gray.

Long-fruited anemone

Rare. Barton. June.

Anemone canadensis L.

A. pennsylvanica L.

Canada anemone

Along the river. Common. May-August.

Anemone quinquefolia L.

A. nemorosa L.

Windflower

Moist thickets and woods. Common. May.

Hepatica hepatica (L.) Karst.

H. triloba Chaix

Round-lobed liverleaf

In thickets and woods. Common. March-May.

Hepatica acuta (Pursh) Britton

H. acutiloba DC.

Sharp-lobed liverleaf

In the same situations as the former but less common. March-May.

Clematis virginiana L.

Virgin's bower

Fence rows, banks of streams and thickets. Common. July. A plant more beautiful in fruit than in flower.

Atragene americana Sims

Clematis verticillaris DC.

Purple virgin's bower

Rocky hillsides. Rare. Owego. May.

Ranunculus reptans L.

R. flammula var. reptans E. Meyer

Creeping spearwort

Shores of the Susquehanna. Infrequent. Apalachin. Summer.

Ranunculus abortivus L.

Kidney-leaved crowfoot

Woods and moist ground. Common. May-June.

Ranunculus sceleratus L.

Ditch crowfoot

Ditches. Infrequent. Apalachin and Barton. May-August.

Ranunculus recurvatus Poir.

Hooked crowfoot

Damp woods. Common. May-June.

Ranunculus acris L.

Meadow buttercup

Fields and meadows. Common. May-September.

Ranunculus pennsylvanicus L. f.

Bristly buttercup

Swamps. Frequent. July-August.

Ranunculus septentrionalis Poir.

Swamp buttercup

Along the river and streams and in swamps. Common. May-July.

Ranunculus hispidus Michx.

Hispid buttercup

Dry woods and thickets. Common. April-May.

Ranunculus fascicularis Muhl.

Early buttercup

In the same places as the last species but less common. April-May.

Thalictrum dioicum L.

Early meadow rue

In shaded stony soil. Common. April-May.

Thalictrum polygamum Muhl.

Tall meadow rue

In wet meadows and along streams. Common. July.

BERBERIDACEAE

Berberis vulgaris L.

European barberry

In yards and occasionally as an escape. May-June.

Caulophyllum thalictroides (L.) Michx.

Blue cohosh

Rich woods and thickets. Frequent. May.

Podophyllum peltatum L.

Mandrake. May apple

Low woods, thickets and fence rows. Common. May.

MENISPERMACEAE

Menispermum canadense L.

Canada moonseed

Along the river banks. Frequent. June.

LAURACEAE

Sassafras sassafras (L.) Karst.

S. officinale Nees

Sassafras

Woods, thickets and fence rows. Frequent. May.

Benzoin benzoin (L.) Coulter

Lindera benzoin Blume

Spice bush. Benjamin bush

In swamps and wet places. Frequent. April-May. The leaves of young shoots are much larger than those of the matured branches.

PAPAVERACEAE

Papaver somniferum L.

Garden poppy

In waste places. Occasional. Summer.

Sanguinaria canadensis L.

Bloodroot

Thickets along the river. Common. April-May.

Chelidonium majus L.

Celandine

Roadsides and waste places. Frequent. May-September.

Bicuculla cucullaria (L.) Millsp.

Dicentra cucullaria DC.

Dutchman's breeches

[illegible]ich woods and thickets, specially along the river. Common. April-May.

Bicuculla canadensis (Goldie) Millsp.

Dicentra canadensis DC.

Squirrel corn

In the same places as the last but much less frequent. May.

Adlumia fungosa (Ait.) Greene

A. cirrhosa Raf.

Climbing fumitory. Alleghany vine

Moist woods and thickets. Infrequent. Tioga Center. Abundant along the Delaware, Lackawanna and Western railroad in the narrows west of Owego. A very beautiful vine. June-October.

CRUCIFERAE

Lepidium campestre (L.) R. Br.

Cow cress

Fields, waste places and along railroads. Common. May-July.

Lepidium virginicum L.

Wild peppergrass

Roadsides. Common. May-November.

Lepidium apetalum Willd.

Apetalous peppergrass

Roadsides in dry soil. Common. June-July.

Lepidium sativum L.

Peppergrass

Roadsides at Apalachin. Escaped from gardens. Infrequent. June-August.

Sisymbrium officinale (L.) Scop.

Hedge mustard

Waste places. Common. May-November.

Sisymbrium altissimum L.

Tall sisymbrium

Waste places, specially along railroads. Owego. Summer. This is a bad weed of recent introduction, but it is now established in many parts of the State.

Brassica nigra (L.) Koch

Black mustard

Fields and waste places. Common. June-November.

Brassica arvensis (L.) B. S. P.

B. sinapistrum Boiss.

Charlock. Wild mustard

Fields and waste places. Common. May-November.

Brassica campestris L.

Turnip

Occurs occasionally in waste places, but does not persist long. Summer.

Brassica napus L.

Rape

This is cultivated for sheep pasture, but sometimes escapes and persists for a short time.

Raphanus sativus L.

Garden radish

This occasionally escapes from cultivation and is spontaneous for a year or two.

Barbarea barbarea (L.) MacM.

B. vulgaris var. arcuata Gray

Yellow rocket

Fields. Common. May-June. Young plants are sometimes used for a pot herb.

Barbarea stricta Andrz.

B. vulgaris var. stricta Gray

Erect-fruited winter cress

Fields and waste places. Frequent. May-June.

Roripa sylvestris (L.) Bess.

Nasturtium sylvestre R. Br.

Creeping yellow water cress

Shores of the Susquehanna at Apalachin. Rare. Summer.

Roripa palustris (L.) Bess.

Nasturtium palustre DC.

Marsh water cress

Wet places, specially along the river. Common. Summer.

Roripa hispida (Desv.) Britton

Nasturtium palustre var. hispidum Gray

With the last but less common. Summer.

Roripa nasturtium (L.) Rusby

Nasturtium officinale R. Br.

Water cress

In brooks and small streams. Frequent. May-November.

Roripa armoracia (L.) A. S. Hitchcock

Nasturtium armoracia Fries

Horse radish

Waste places and along streams. Common. Summer.

Cardamine pennsylvanica Muhl.

Pennsylvania bitter cress

Swamps and wet places. Common. May-June.

Cardamine bulbosa (Schreb.) B. S. P.

C. rhomboidea DC.

Bulbous cress

Damp fields and thickets. Common. May-June.

Dentaria laciniata Muhl.

Cut-leaved toothwort

Moist soil in rich woods, specially along the river. Common. May.

Dentaria diphylla Michx.

Two-leaved toothwort

Rich woods and along small streams. Frequent. May.

Bursa bursa-pastoris (L.) Britton

Capsella bursa-pastoris Medic

Shepherd's purse

Fields and waste places. Abundant. March-January. Frequently used as a pot herb.

Arabis lyrata L.

Lyre-leaved rock cress

Along the river at Apalachin, growing on stony banks, upturned roots of trees and even on their trunks. Infrequent. May-August.

Arabis dentata T. & G.

Toothed rock cress

River shores. Infrequent. Barton. May-June.

Arabis hirsuta (L.) Scop.

Hairy rock cress

Thickets in stony soil. Infrequent. Apalachin and Campville. May-August.

Arabis laevigata (Muhl.) Poir.

Smooth rock cress

River banks. Frequent. May.

Arabis canadensis L.

Sickle pod

Woods and thickets, specially those along the river. Common. June-August.

Arabis glabra (L.) Bernh.

A. perfoliata Lam.

Tower mustard

Stony soil in a thicket near Apalachin. Infrequent. May-August.

Erysimum cheiranthoides L.

Treacle mustard

Fields and along streams. Common. Summer.

Hesperis matronalis L.

Dames rocket. Dames violet

Fields and thickets along the river. Common. May-August.

RESEDACEAE

Reseda odorata L.

Mignonette

Roadsides and waste places. Tioga Center.

SARRACENIACEAE

Sarracenia purpurea L.

Pitcher plant

Plentiful in peat bogs in the vicinity of Barton. June.

DROSERACEAE

Drosera rotundifolia L.

Round-leaved sundew

Bogs and specially on partly decayed logs. Mutton hill pond. Barton. July.

CRASSULACEAE

Sedum telephium L.

Live forever

In fields and along roadsides. Common. July.

Sedum acre L.

Mossy stonecrop

Occasionally escapes from cultivation. July.

Penthorum sedoides L.

Ditch stonecrop

Swamps, ditches and along streams. July-August.

SAXIFRAGACEAE

Saxifraga pennsylvanica L.

Swamp saxifrage

Swamps. Frequent. May.

Saxifraga virginiensis Michx.

Early saxifrage

Stony banks of the river and in thickets. Common. April-May.

Tiarella cordifolia L.

Coolwort. False miterwort

Rich, moist woods and shaded ravines. Common. May.

Mitella diphylla L.

Miterwort

In rich woods with the preceding. Common. May.

Chrysoplenium americanum Schwein.

Golden saxifrage. Water carpet

Wet, shaded places. Common. May.

GROSSULARIACEAE

Ribes cynosbati L.

Wild gooseberry

Old fields, thickets and fence rows. Frequent. May.

Ribes rotundifolium Michx.

Round-leaved gooseberry

Rocky woods in the vicinity of Barton. Infrequent. May.

Ribes prostratum L'Her.

Fetid currant

Cold, wet places near Barton. Occasional. May.

Ribes floridanum L'Her.

Wild black currant

Woods and thickets. Rather common. May.

Ribes rubrum L.

Red currant

Cultivated for its fruit, but sometimes it escapes to roadsides. May.

Ribes aureum Pursh

Golden currant

This also is cultivated for its fruit and its fragrant flowers, but it occasionally escapes and grows spontaneously. May.

HAMAMELIDACEAE

Hamamelis virginiana L.

Witch hazel

A common shrub in woods and thickets and along fence rows. Autumn.

PLATANACEAE

Platanus occidentalis L.

Buttonwood. Sycamore

Along the river and streams. Common. May.

ROSACEAE

Opulaster opulifolius (L.) Kuntze

Physocarpus opulifolius Maxim

Ninebark

River banks. Common. June.

Spiraea salicifolia L.

Meadowsweet

Swamps and moist ground. Common. July.

Spiraea tomentosa L.

Hardhack. Steeple bush

Swamp east of Campville. Rare. August.

Porteranthus trifoliatus (L.) Britton

Gillenia trifoliata Moench

Indian physic. Bowman's root

Open upland woods. Frequent. June-July.

Rubus odoratus L.

Purple-flowering raspberry

Rocky woods and ravines. Frequent.

Rubus strigosus Michx.

Wild red raspberry

Neglected fields and along roadsides and fences. Common. June. It frequently flowers and fruits in late summer and autumn.

Rubus neglectus Pk.

Purple wild raspberry

In the same localities as the last, but infrequent. June. It has dark red or purple fruit, long recurved stems and much resembles R. occidentalis.

Rubus americanus (Pers.) Britton

R. triflorus Richards.

Dwarf raspberry

Swamps and low woods. Frequent. June.

Rubus nigrobaccus Bailey

R. villosus Ait.

High bush blackberry

Woods, fields and thickets. Abundant. June. The white fruited form occurs near Barton.

Rubus villosus frondosus Bigel.

This variety occurs with the typical form.

Rubus allegheniensis Porter

Mountain blackberry

Thickets and fields. Common. June.

Rubus hispidus L.

Running swamp blackberry

Plentiful in swamps and low grounds. June.

Rubus procumbens Muhl.

R. canadensis T. & G.

Dewberry

Fields and railroad banks. Common. This is our earliest fruiting blackberry. May.

Dalibarda repens L.

Dalibarda. False violet

Moist woods. Infrequent. Apalachin. June-August.

Fragaria virginiana Duchesne

Strawberry

Fields and pastures. Common. May-June.

Fragaria vesca L.

European wood strawberry

Fields and roadsides. Frequent. May-June. An escape from cultivation.

Fragaria americana (Porter) Britton

American wood strawberry

Rocky woods. Common. May-June.

Potentilla arguta Pursh

Tall cinquefoil

Along roadsides at Barton. Common. June.

Potentilla argentea L.

Silvery cinquefoil

Dry fields and roadsides. Common. June-August.

Potentilla monspeliensis L.

P. norvegica L.

Rough cinquefoil

Fields and waste places. Common. June-September.

Potentilla canadensis L.

Fivefinger

Abundant in dry fields. May-August.

Potentilla pumila Poir.

Dwarf fivefinger

Dry fields and banks. Common. April-June.

Comarium palustre L.

Potentilla palustris Scop.

Marsh cinquefoil

Plentiful about Mutton hill pond and in Marshland swamp. June-August.

Waldsteinia fragarioides (Michx.) Tratt.

Barren strawberry

Woods and thickets in dry or moist soil. Common. May.

Geum rivale L.

Purple avens. Water avens

Swamps and low grounds. Frequent. May-June.

Geum canadense Jacq.

G. album Gmelin

White avens

Shaded places. Common. June.

Geum virginianum L.

Rough avens

Low ground. Frequent. June.

Geum strictum Ait.

Yellow avens

Fields, thickets and borders of woods. Common. June.

Agrimonia hirsuta (Muhl.) Bicknell

Tall hairy agrimony

Woods and thickets. Frequent. June-August.

Agrimonia striata Michx.

Woodland agrimony

Dry woods. Common. July-September.

Rosa blanda Ait.

Smooth rose

Rocky places. Common. June.

Rosa carolina L.

Swamp rose

Swamps and low grounds. Common. Sometimes forming dense thickets. June-July.

Rosa humilis Marsh.

Dwarf rose

Dry or rocky soil. Common. June.

Rosa humilis lucida (Ehrh.) Best

R. lucida Ehrh.

Shining wild rose

Rocky soil. Occasional. June.

Rosa rubiginosa L.

Sweetbrier

Fields and roadsides. Occasional. June-July.

Rosa cinnamomea L.

Cinnamon rose

Roadsides in the vicinity of dwellings.

POMACEAE

Sorbus americana Marsh.

Pyrus americana DC.

American mountain ash

Swamps. Rare. Barton. June-July.

Pyrus communis L.

Choke pear

Near dwellings and occasionally in fields. Fruit very astringent. May.

Malus coronaria (L.) Mill.

Pyrus coronaria L.

American crab apple

Scattered throughout our territory. Flowers rose-colored, fragrant; fruit greenish yellow, fragrant and very acid. May.

Malus malus (L.) Britton

Pyrus malus L.

Apple

Woods, thickets and fence rows. Fruit sweet or sour. Frequent. May.

Aronia arbutifolia (L.) Ell.

Pyrus arbutifolia L.f.

Red chokeberry

Marshland swamp. This is the only station observed. May.

Aronia nigra (Wild.) Britton

Pyrus arbutifolia var. melanocarpa Hook.

Black chokeberry

Swamps and bogs. Common. May-June.

Amelanchier canadensis (L.) Medic

Juneberry

Woods, thickets and fence rows. Common. May.

Amelanchier botryapium (L.) DC.

A. canadensis var. oblongifolia T. & G.

Shad bush

Woods and thickets. Common. May.

Amelanchier spicata (Lam.) DC.

Low Juneberry

Rocky banks. Infrequent. Barton and Apalachin. A shrub 2 to 3 feet high, which fruits very abundantly.

Crataegus crus-galli L.

Cockspur thorn

Woods and thickets. Frequent. May.

Crataegus punctata Jacq.

Large-fruited thorn

Thickets and fields. Common. May.

Crataegus oxyacantha L.

Hawthorn

Yards and their borders. Frequent. May.

Crataegus coccinea L.

Scarlet thorn

Woods, thickets and pastures. Common. May.

Crataegus macracantha Lodd.

C. coccinea var. macracantha Dudley

Long-spined thorn

Woods at Apalachin. Occasional. May.

Crataegus tomentosa L.

Pear thorn

Roadsides near Barton. Rare. It flowers later than our other species of thorns. June.

Prunus americana Marsh.

Wild red plum

Along streams and in moist woods, often forming thickets. Frequent. May.

Prunus cerasus L.

Sour cherry

Escaped from cultivation to roadsides and thickets. May.

Prunus avium L.

Sweet cherry

Escaped from cultivation to roadsides. May.

Prunus pennsylvanica L.f.

Wild red cherry. Pin cherry

In thickets and along fences. Common. May-June.

Prunus virginiana L.

Choke cherry

Fence rows, roadsides, banks of the river and along streams. Common. Fruit dark red or almost black, astringent. May.

Prunus serotina Ehrh.

Wild black cherry

Along fence rows and in woods and clearings. Sometimes growing to a large size. May.

Amygdalus persica L.

Prunus persica L.

Peach

Roadsides and neglected fields. April-May.

CAESALPINACEAE

Cassia nictitans L.

Sensitive pea

River shore west of Campville. August.

Gleditsia triacanthos L.

Honey locust

Abundant in hedges on the river flats at Campville. May-June.

PAPILIONACEAE

Lupinus perennis L.

Wild lupine

Banks, specially along railroads. Abundant in some places. May-June.

Medicago sativa L.

Alfalfa. Lucerne

In fields and along railroads. Frequent. Summer.

Medicago lupulina L.

Black medic. Nonesuch

Fields, waste places and specially along railroads. May-November.

Melilotus alba Desv.

White sweet clover

Waste places and along railroads. Common. June-October.

Melilotus officinalis (L.) Lam.

Yellow sweet clover

Waste places. Infrequent. Apalachin and Campville. Summer.

Trifolium agrarium L.

Yellow clover. Hop clover

Fields and roadsides. Frequent. May-September.

Trifolium procumbens L.

Low hop clover

Fields in the vicinity of Campville. Infrequent. May-September.

Trifolium incarnatum L.

Crimson clover

Meadows. Frequent. A beautiful species with conspicuous, bright crimson flowers. Often cultivated. Summer.

Trifolium arvense L.

Rabbit foot. Stone clover

Along roadsides at Apalachin and Barton. Common. Summer.

Trifolium pratense L.

Red clover

Fields and meadows. Abundant. May-October.

Trifolium hybridum L.

Alsike clover

Grass lands. Common. June-October.

Trifolium repens L.

White clover

Fields, open and waste places. Very common. May-December.

Robinia pseudacacia L.

Locust tree

Naturalized along the banks of the Susquehanna and often forming almost impenetrable thickets. June.

Robinia viscosa Vent.

Clammy locust

Roadside near Waverly. June.

Meibomia nudiflora (L.) Kuntze

Desmodium nudiflorum DC.

Naked-flowered tick trefoil

Dry woods and thickets. Common. July-August.

Meibomia grandiflora (Walt.) Kuntze

Desmodium acuminatum DC.

Pointed-leaved tick trefoil

Woods. Common. Summer.

Meibomia michauxii Vail

Prostrate tick trefoil

Dry woods in various places near Campville. July-September.

Meibomia paniculata (L.) Kuntze

Desmodium paniculatum DC.

Panicled tick trefoil

Dry soil in coppices. Common. July-September.

Meibomia dillenii (Darl.) Kuntze

Desmodium dillenii Darl.

Dillen's tick trefoil

Dry woods and fields. Common. Summer.

Meibomia canadensis (L.) Kuntze

Desmodium canadense DC.

Showy tick trefoil

Abundant along the river shores and railroad embankments. July-September.

Meibomia marylandica (L.) Kuntze

Desmodium marylandicum Boott.

Smooth, small-leaved tick trefoil

Dry soil. Frequent. July-September.

Lespedeza procumbens Michx.

Trailing bush clover

Dry soil at the base of a hill near Apalachin. The only station. August-September.

Lespedeza violacea (L.) Pers.

Bush clover

Dry banks of the river at Apalachin and Barton. Infrequent. August-September.

Lespedeza frutescens (L.) Britton

L. stuvei var. intermedia Wats.

Wandlike bush clover

Dry open coppices along the river. August-September.

Lespedeza hirta (L.) Ell.

L. polystachya Michx.

Hairy bush clover

Dry thickets. Common. August-October.

Lespedeza capitata Michx.

Round-headed bush clover

Dry banks in the river valley. Abundant. August-September.

Vicia cracca L.

Tufted vetch

Along roadsides and in dry fields. Frequent. May-August.

Vicia americana Muhl.

American vetch

Damp soil along the river. Common. May-August.

Vicia caroliniana Walt.

Carolina vetch

River valley. Common. May-July.

Lathyrus ochroleucus Hook.

Cream-colored vetchling

Infrequent at Apalachin but common in the western part of our range. May-July.

Falcata comosa (L.) Kuntze

Amphicarpa monoica Nutt.

Wild peanut

Moist thickets. Common. August-September.

Apios apios (L.) MacM.

A. tuberosa Moench

Ground nut

Damp grounds, specially along the river. Common. July-September.

GERANIACEAE

Geranium maculatum L.

Spotted crane's-bill. Alum root

Woods, thickets and moist meadows. Common. May-July.

Geranium robertianum L.

Herb robert. Red robin

Rocky woods. Infrequent. May-September.

Geranium carolinianum L.

Carolina cranesbill

River valley. Frequent. May-August.

Geranium bicknellii Britton

Bicknell's cranesbill

With the last but more common. May-September.

OXALIDACEAE

Oxalis acetosella L.

White wood sorrel

Cold, damp woods, specially under hemlocks. It bears cleistogamous flowers and yields the so called "salt of lemons." Common. June-July.

Oxalis violacea L.

Violet wood sorrel

Open woods at Campville and in alluvial soil along Apalachin creek and along the river at Apalachin. May-June.

Oxalis stricta L.

O. corniculata var. stricta Sav.

Yellow wood sorrel

Woods and fields. Common. May-October.

Oxalis cymosa Small

Tall yellow wood sorrel

Woods, cultivated and waste ground. Frequent. May-October.

LINACEAE

Linum usitatissimum L.

Flax

Along railroads. Frequent. Summer.

Linum virginianum L.

Wild yellow flax

In an old field near Campville. The only station. June.

RUTACEAE

Xanthoxylum americanum Mill.

Prickly ash

Roadsides at Apalachin and Barton. May.

SIMARUBACEAE

Ailanthus glandulosus Desf.

Tree of heaven

Introduced from China. Escaped from cultivation at Barton. It spreads freely both by seeds and suckers.

POLYGALACEAE

Polygala verticillata L.

Whorled milkwort

Fields and roadsides in dry soil. Common. June-November.

Polygala viridescens L.

P. sanguinea L.

Purple milkwort

Hilltops near Apalachin. Infrequent. June-September.

Polygala senega L.

Seneca snakeroot

Apalachin, Owego and Barton. Infrequent. June.

Polygala paucifolia Willd.

Flowering wintergreen. Fringed milkwort

Open woods and thickets. Common. May-June.

EUPHORBIACEAE

Acalypha virginica L.

Three-seeded mercury

A weed plentiful in fields. June-October.

Euphorbia maculata L.

Spotted spurge. Milk purslane

Dry, gravelly soil, specially along railroads. Very common. June-October.

Euphorbia nutans Lag.

E. preslii Guss.

Large spotted spurge

With the last but less common. May-October.

Euphorbia corollata L.

Flowering spurge

Waste places. Occasional. May-September.

Euphorbia lucida W. & R.

E. nicaeensis All.

Nicaean spurge

About villages throughout the river valley. June-July.

Euphorbia cyparissias L.

Cypress spurge

Roadsides and waste places. Common. Abundant in old cemeteries. May-September.

CALLITRICHACEAE

Callitriche palustris L.

C. verna L.

Vernal water starwort

Slow streams. Occasional. July.

ANACARDIACEAE

Rhus hirta (L.) Sudw.

R. typhina L.

Staghorn sumac

Dry or rocky soil. Common. June.

Rhus glabra L.

Smooth sumac

Dry soil. Common. June.

Rhus vernix L.

R. venenata DC.

Poison sumac

Swamps and their borders. Frequent. Plentiful about Mutton hill pond. June.

Rhus radicans L.

R. toxicodendron L.

Poison ivy

Damp thickets, along fences and river banks. Common. June.

ILICACEAE

Ilex verticillata (L.) Gray

Black alder. Winter berry

Swamps. Common. A shrub rendered conspicuous in late autumn and winter by its bright red berries.

Ilicioides mucronata (L.) Britton

Nemopanthes fasicularis Raf.

Mountain holly

Swamps and bogs. Frequent. May.

CELASTRACEAE

Euonymus europaeus L.

Spindle tree

Escaped from cultivation. Infrequent. Apalachin. June.

Celastrus scandens L.

Climbing bittersweet

Rich soil along fences and streams. An attractive plant when in fruit. Frequent. June.

STAPHYLEACEAE

Staphylea trifolia L.

American bladder nut

Abundant along the south bank of the river at Barton. Formerly found at Apalachin. May.

ACERACEAE

Acer saccharinum L.

A. dasycarpum Ehrh.

Silver maple

Along banks of streams. The principal tree along the banks of the river. Common. March-April.

Acer rubrum L.

Soft maple. Red maple

Wet or dry soil. Common. March-April.

Acer saccharum Marsh.

A. saccharinum Wang.

Hard maple. Sugar maple. Rock maple

Woods and fields. Common. April-May. This is often planted as a shade tree. Its sap is the main source of maple sugar.

Acer nigrum Michx.

A. saccharinum var. nigrum T. & G.

Black sugar maple

Less common than the preceding species, which it closely resembles, but from which it may easily be distinguished by the bark and leaves. The sap is rich in sugar. April-May.

Acer pennsylvanicum L.

Striped maple. Moosewood

Rocky woods and ravines. Common. June.

Acer spicatum Lam.

Mountain maple

Along streams, in glens and ravines. Common. June.

HIPPOCASTANACEAE

Aesculus hippocastanum L.

Horse-chestnut

Cultivated as a shade tree, and occasionally escapes from cultivation. June.

BALSAMINACEAE

Impatiens biflora Walt.

I. fulva Nutt.

Spotted touch-me-not

Damp, shaded places. Common. July-September.

Impatiens aurea Muhl.

I. pallida Nutt.

Pale touch-me-not

With the last but more abundant along the river. July-September. The mature capsules of both species burst at the slightest touch and expel the seeds with much force; hence the name "touch-me-not."

RHAMNACEAE

Rhamnus cathartica L.

Buckthorn

Planted for hedges, but it occasionally escapes to fields and fence rows. June.

Rhamnus alnifolia L'Her.

Alder-leaved buckthorn

Swamps north of Barton. Infrequent. June.

Ceanothus americanus L.

New Jersey tea. Redroot

Dry, open woods and neglected fields. Abundant. June. The leaves are said to have been used as a substitute for tea by the American troops during the Revolutionary War.

VITACEAE

Vitis aestivalis Michx.

Summer grape

Fence rows and along the river banks. Common. June. The fruit ripens early in autumn.

Vitis vulpina L.

Sweet-scented grape

Banks of the river. Frequent. May-June. Fruit ripe in August and September.

Vitis cordifolia Michx.

Frost grape. Chicken grape

Thickets and banks of streams. Common. May-June. Fruit ripe in October and November.

Parthenocissus quinquefolia (L.) Planch.

Ampelopsis quinquefolia Michx.

Virginia creeper. American ivy

Woods, thickets and fence rows. Common. July.

TILIACEAE

Tilia americana L.

Basswood. American linden

Rich soil. Common. June-July.

MALVACEAE

Malva sylvestris L.

High mallow

Waste places and along roadsides. Infrequent. Summer.

Malva rotundifolia L.

Low mallow. Cheeses

Gardens and waste places. Abundant. May-November.

Malva moschata L.

Musk mallow

Meadows and roadsides. Frequent. Summer.

Abutilon abutilon (L.) Rusby

A. avicennae Gaertn.

Velvet leaf. Indian mallow

Gardens and waste places. Common. August-October.

Hibiscus trionum L.

Flower-of-an-hour

Waste places at Barton. Adventive from Europe. August-September.

HYPERICACEAE

Hypericum ascyron L.

Great St John's wort

Banks of the river. Common. July.

Hypericum ellipticum Hook.

Pale St John's wort

Swamps and banks of streams. Common. July-August.

Hypericum perforatum L.

Common St John's wort

Abundant in fields and waste places. June-September.

Hypericum maculatum Walt.

Corymbed St John's wort

Fields, roadsides and open woods. Common. July-September.

Hypericum mutilum L.

Dwarf St John's wort

Common in damp, sterile soil. July-August.

Hypericum canadense L.

Canadian St John's wort

Wet sandy soil. Frequent. July-September.

Triadenum virginicum (L.) Raf.

Elodes campanulata Pursh

Marsh St John's wort

Swamps and along streams. Common. July-September.

CISTACEAE

Helianthemum canadense (L.) Michx.

Frostweed

Plentiful along both banks of the river at Apalachin. May-July.

VIOLACEAE

Viola palmata L.

Early blue violet

Dry, open thickets, specially along roadsides. Frequent. May. The leaves of this species are very variable, and some forms of the plant closely resemble V. atlantica Britton.

Viola obliqua Hill

V. palmata var. cucullata Gray

Hooded violet

Damp woods, meadows and swamps. May-June.

Viola papilionacea Pursh

Common blue violet

About dwellings and in grass lands. Our most common species. May-June.

Viola domestica Bicknell

Yard violet

Yards and cultivated ground. Frequent. April-May. Sometimes considered a variety of the preceding species.

Viola cucullata Ait.

Marsh blue violet

Near the mouth of Apalachin creek. Infrequent. May-June.

Viola villosa Walt.

Southern wood violet

Dry, shaded soil. The "hogback" near Apalachin, the only station for it in our range. Its leaves are closely pressed to the ground, and it much resembles the false violet, Dalibarda repens. April-May.

Viola sororia Willd.

Woolly blue violet

Fields and roadsides. Common. Plentiful along the Mutton hill road. May-June.

Viola sagittata Ait.

Arrow-leaved violet

Meadows near Apalachin. Rare. May.

Viola ovata Nutt.

Ovate-leaved violet

Fields and roadsides in dry soil. Common. April-May.

Viola rotundifolia Michx.

Round-leaved violet

Cold, damp woods. Frequent. April-May. Its leaves are small at flowering time, but they are 3-5 inches broad in summer and appressed to the ground.

Viola blanda Willd.

Sweet white violet

Swamps, wet woods and along streams. Common. April-May.

Viola blanda amoena (Le Conte) B. S. P.

V. blanda var. palustriformis Gray

Wet woods. Not common.

Viola pubescens Ait.

Hairy yellow violet

Woods in dry soil. Common. May.

Viola scabriuscula (T. & G.) Schwein.

V. pubescens var. scabriuscula T. & G.

Smooth yellow violet

Damp woods and thickets along the river. Common. April-May.

Viola canadensis L.

Canada violet

Woods. Infrequent. May-July.

Viola striata Ait.

Pale violet. Striped violet

Low woods and thickets in the river valley. Very common. May.

Viola labradorica Schrank.

V. canina var. muhlenbergii Gray

Dog violet

Moist woods and fields. Our most abundant caulescent violet. April-May.

Viola rostrata Pursh

Long-spurred violet

Moist, rocky places. Scarce. June.

THYMELEACEAE

Dirca palustris L.

Moosewood

Cold, damp woods, specially along mountain streams. Infrequent. April-May.

ONAGRACEAE

Isnardia palustris L.

Ludwigia palustris Ell.

Marsh purslane

Swamps and muddy places along brooks. Common. June-October.

Chamaenerion angustifolium (L.) Scop.

Epilobium angustifolium L.

Great willow herb. Fireweed

Wet or dry soil. Often abundant in woodlands recently overrun by fire. June-August.

Epilobium lineare Muhl.

Linear-leaved willow-herb

Swamps. Common. July-August.

Epilobium coloratum Muhl.

Purple-leaved willow-herb

Low grounds. Infrequent. July-September.

Epilobium adenocaulon Haussk.

Northern willow-herb

Moist ground. Common. July-September.

Onagra biennis (L.) Scop.

Oenothera biennis L.

Evening primrose

Roadsides and fields. Common. June-September.

Kneiffia pumila (L.) Spach

Oenothera pumila L.

Small sundrops

Fields in wet or dry soil. Common. June-July.

Kneiffia fruticosa (L.) Raimann

Oenothera fruticosa L.

Common sundrops

Dry soil. Frequent. June-July.

Gaura biennis L.

Biennial gaura

Meadows and pastures along the river. July-August.

Circaea lutetiana L.

Enchanter's nightshade

Rich, moist woods. Common. June-July.

Circaea alpina L.

Smaller enchanter's nightshade

Cold, moist woods. July-August. This plant seems to prefer the sites of old logs.

HALORAGIDACEAE

Myriophyllum spicatum L.

Spiked water milfoil

Susquehanna river in deep water. Infrequent. Summer.

ARALIACEAE

Aralia nudicaulis L.

Wild sarsaparilla

Woods and thickets. Common. May-June.

Aralia racemosa L.

Spikenard

Damp, shaded places. Frequent. July.

Aralia hispida Vent.

Bristly sarsaparilla. Dwarf elder

Swamps and openings on dry hemlock knolls. Infrequent. June.

Panax quinquefolium L.

Aralia quinquefolia D. & P.

Ginseng

Rich woods. Rare. July. Formerly more common but now fast disappearing, because of the high price paid for its roots.

Panax trifolium L.

Aralia trifolia D. & P.

Ground nut

Moist woods and thickets. Common. May.

UMBELLIFERAE

Daucus carota L.

Wild carrot

Fields and roadsides. Very common. June-September.

Angelica atropurpurea L.

Purple-stemmed angelica

Along streams. Common. June-July.

Angelica villosa (Walt.) B. S. P.

A. hirsuta Muhl.

Hairy angelica

Dry, open woods. Common. July.

Heracleum lanatum Michx.

Cow parsnip

Low ground along the river and its branches. Common. June.

Pastinaca sativa L.

Wild parsnip

Roadsides and waste places. Common. Summer.

Thaspium trifoliatum aureum (Nutt.) Britton

T. aureum Nutt.

Golden alexanders

Woods, thickets and meadows. Common. June.

Thaspium barbinode (Michx.) Nutt.

Meadow parsnip

Alluvial soil. Frequent. May-June.

Sanicula marylandica L.

Sanicle. Black snakeroot

Rich woods. Common. May-June.

Pimpinella integerrima (L.) Gray

Yellow pimpernel

Rocky soil. Common. May.

Washingtonia claytoni (Michx.) Britton

Osmorrhiza brevistylis DC.

Hairy sweet cicely

Woods. Common. May-June.

Washingtonia longistylis (Torr.) Britton

Osmorrhiza longistylis DC.

Smooth sweet cicely

Woods and shaded places in fields and by roadsides. Common. May-June.

Conium maculatum L.

Poison hemlock

Waste places. Frequent. June. The root is very poisonous.

Sium cicutaefolium Gmel.

Water parsnip

Swamps. Common. July-September.

Zizia aurea (L.) Koch

Golden meadow parsnip

Fields and meadows. Common. May.

Zizia cordata (Walt.) DC.

Heart-leaved alexanders

Open woods and thickets. Frequent. May.

Carum carui L.

Caraway

Dooryards and waste places. Common. May-June.

Cicuta maculata L.

Water hemlock. Musquash root

Swamps. Common. June-July.

Cicuta bulbifera L.

Bulb-bearing water hemlock

Swamps, ponds and along streams. Frequent. Plentiful about Mutton hill pond. July-August.

Deringa canadensis (L.) Kuntze

Cryptotaenia canadensis DC.

Honewort

Woods. Common. June.

Hydrocotyle americana L.

Marsh pennywort

Wet, shaded places. Common. June-September.

CORNACEAE

Cornus canadensis L.

Dwarf cornel. Bunchberry

Low woods and damp, shaded places. Abundant. May-June.

Cornus florida L.

Flowering dogwood

Upland woods. Common. April-May. This shrub or small tree is conspicuous in early spring by reason of its large, white bracted flowers and again in autumn by its bright red leaves. Its wood is hard and used in the manufacture of toys.

Cornus circinata L'Her.

Round-leaved cornel

Thickets. Frequent. June.

Cornus amomum Mill.

C. sericea L.

Silky cornel. Kinnikinick

Low woods, borders of swamps and along streams. June.

Cornus stolonifera Michx.

Red osier

Borders of swamps. Common. June.

Cornus candidissima Marsh.

C. paniculata L'Her.

Panicled cornel

Thickets and fence rows. Common. June.

Cornus alternifolia L. f.

Alternate-leaved cornel

Open woods. Common. June.

Nyssa sylvatica Marsh.

Pepperidge. Sour gum

Moist soil, specially along the borders of swamps. Frequent. May. This tree is conspicuous in autumn by its bright crimson leaves. Its wood is soft but hard to split, and at an early day was much used for ox yokes.

PYROLACEAE

Pyrola rotundifolia L.

Round-leaved wintergreen

Rich woods. Common. July.

Pyrola chlorantha Sw.

Greenish-flowered wintergreen

Pyrola elliptica Nutt.

Shin leaf

Rich woods. Common. July.

Pyrola secunda L.

One-sided wintergreen

Woods and thickets. Common. July.

Chimaphila maculata L.

Spotted wintergreen

Dry woods west of Barton. Rare. June-July.

Chimaphila umbellata (L.) Nutt.

Prince's pine. Pipsissewa

Dry, rich woods. Common. June-July.

MONOTROPACEAE

Monotropa uniflora L.

Indian pipe

Moist, rich woods. Frequent. July.

ERICACEAE

Azalea nudiflora L.

Rhododendron nudiflorum Torr.

Azalea. Mayflower

Woods and thickets. Common. May.

Azalea canescens Michx.

Mountain azalea

Brush lots and borders of swamps. Common. May.

Kalmia latifolia L.

Mountain laurel

Rocky woods, specially on the sides of rocky ravines. Near Campville, in the Delaware, Lackawanna and Western narrows near Owego, and on Watch hill. June.

Kalmia glauca Ait.

Pale laurel

Bogs north of Barton. Rare. June.

Andromeda polifolia L.

Wild rosemary. Moorwort

Bogs north of Barton. Infrequent. May.

Xolisma ligustrina (L.) Britton

Andromeda ligustrina Muhl.

Andromeda

Wet or dry soil but more frequently in swamps. Common. June.

Chamaedaphne calyculata (L.) Moench

Cassandra calyculata Don

Leather leaf

Bogs and swamps, where it forms low, dense thickets. Abundant. May.

Epigaea repens L.

Trailing arbutus. Mayflower

Woods and bushy fields, preferring damp situations. April-May.

Gaultheria procumbens L.

Wintergreen

Woods and thickets in soil wet or dry. Common. June-July.

VACCINIACEAE

Gaylussacia resinosa (Ait.) T. & G.

Black huckleberry

Woods and thickets, preferring rocky soil. Common. May.

Vaccinium corymbosum L.

Swamp blueberry

Swamps and their borders. Common. May.

Vaccinium atrococcum (Gray) Heller

V. corymbosum var. atrococcum Gray

Black blueberry

Swamps. Frequent. May.

Vaccinium pennsylvanicum Lam.

Dwarf blueberry

Dry, rocky or sandy soil. Common. May.

Vaccinium nigrum (Wood) Britton

V. pennsylvanicum var. nigrum Wood

Low black blueberry

Dry, rocky soil. Frequent. May.

Vaccinium vacillans Kalm

Low blueberry

Dry soil. Common. May.

Vaccinium stamineum L.

Deerberry

Dry thickets, specially on hillsides. Common. May. The Canada blueberry, V. canadense, which is common in nearly all elevated swamps, is apparently wanting in our limits.

Chiogenes hispidula (L.) T. & G.

C. serpyllifolia Salisb.

Creeping snowberry

Bogs and cold wet woods north of Barton. May. This plant has the odor and flavor of birch. Its fruit is white.

Oxycoccus oxycoccus (L.) MacM.

Vaccinium oxycoccus L.

Small cranberry

Bogs north of Barton. June.

Oxycoccus macrocarpus (Ait.) Pers.

Vaccinium macrocarpon Ait.

Large cranberry

Mutton hill pond and bogs near Barton. June. More common than the preceding species.

PRIMULACEAE

Lysimachia quadrifolia L.

Whorled loosestrife

Thickets and neglected fields. Common. June-July.

Lysimachia terrestris (L.) B. S. P.

L. stricta Ait.

Bulb-bearing loosestrife

Swamps, moist thickets and the river shores. Common. July-September.

Lysimachia nummularia L.

Moneywort

Lawns and roadsides near houses. Common. June-August.

Steironema ciliatum (L.) Raf.

Fringed loosestrife

Moist thickets. Common. June-July.

Naumbergia thyrsiflora (L.) Duby

Lysimachia thyrsiflora L.

Tufted loosestrife

Swamps north of Barton. Infrequent. May-June.

Trientalis americana Pursh

Star flower

Damp woods. Common. May.

OLEACEAE

Syringa vulgaris L.

Lilac

Roadsides, specially near deserted dwellings, occasionally in fields. Common. May.

Fraxinus americana L.

White ash

Common in rich woods. May.

Fraxinus pennsylvanica Marsh.

F. pubescens Lam.

Red ash

Moist soil. Frequent. May.

Fraxinus nigra Marsh.

F. sambucifolia Lam.

Black ash

Swamps. Common. May.

Ligustrum vulgare L.

Privet

Escaped from cultivation to roadsides in the vicinity of Barton. July.

GENTIANACEAE

Gentiana crinita Froel.

Fringed gentian

Plentiful in a moist field near Apalachin. This is its only known station in our limits. Autumn.

Gentiana quinquefolia L.

G. quinqueflora Lam.

Stiff gentian. Ague weed

Neglected fields. Common. September.

Gentiana andrewsii Griseb.

Closed gentian

Moist soil, specially along streams. Frequent. August-September.

MENYANTHACEAE

Menyanthes trifoliata L.

Buck bean. Bog bean

Bogs. Mutton hill pond. Infrequent. May-June.

APOCYNACEAE

Vinca minor L.

Myrtle. Periwinkle

Dooryards and specially abundant about old graveyards. May.

Apocynum androsaemifolium L.

Spreading dogbane

Fields, thickets and fence rows. Common. July.

Apocynum cannabinum L.

Indian hemp

Abundant on gravelly shores of the river. July-August.

ASCLEPIADACEAE

Asclepias tuberosa L.

Butterfly weed. Pleurisy root

Dry fields and along railroads. Frequent. August. Abundant along the Erie railroad east of Campville.

Asclepias incarnata L.

Swamp milkweed

Swamps and wet places. Common. July-August.

Asclepias exaltata (L.) Muhl.

A. phytolaccoides Pursh

Tall milkweed

Open woodlands. Common. July.

Asclepias quadrifolia Jacq.

Four-leaved milkweed

Woods and thickets. Common. June-July.

Asclepias syriaca L.

A. cornuti Dec.

Common milkweed. Silkweed

Fields and waste places. Very common. July.

CONVOLVULACEAE

Ipomoea purpurea (L.) Roth

Morning-glory

Waste places. Frequent. Escapes from cultivation.

Convolvulus sepium L.

Hedge bindweed

Thickets and fields. Abundant on the river flats. Common. Summer.

Convolvulus spithamaeus L.

Upright bindweed

Rocky banks. Common. June.

Convolvulus arvensis L.

Field bindweed

Along the railroad at Apalachin. Rare. July-August.

CUSCUTACEAE

Cuscuta coryli Engelm.

C. inflexa Engelm.

Hazel dodder

River flats at Campville. Rare. August. It grows on hazel bushes.

Cuscuta gronovii Willd.

Dodder. Love vine

Damp, shaded grounds, parasitic on herbs and low shrubs. Very common. August.

POLEMONIACEAE

Phlox paniculata L.

Garden phlox

Cultivated for its flowers, but it frequently escapes from gardens. July.

Phlox maculata L.

Wild sweet william

Cultivated for its flowers, but it occasionally escapes from gardens. June-July.

Phlox divaricata L.

Wild blue phlox

Moist woods along streams, specially along Apalachin creek. Common. May.

Phlox subulata L.

Ground pink. Moss pink

Common on hillsides from Smithboro to the western limit of our range. April-May.

Polemonium reptans L.

Greek valerian. Jacob's ladder

Low woods along the river at Barton. Scarce in the eastern part of our range. May.

HYDROPHYLLACEAE

Hydrophyllum virginicum L.

Virginia waterleaf

Woods and shady places. Common. June.

Hydrophyllum canadense L.

Broad-leaved waterleaf

Plentiful in bottom woods near Barton but not observed elsewhere in our limits.

BORAGINACEAE

Cynoglossum officinale L.

Hound's-tongue

Fields and waste places. Frequent. June-July.

Cynoglossum virginicum L.

Wild comfrey

Open woods. Infrequent. May.

Lappula virginiana (L.) Greene

Echinospermum virginicum Lehm.

Beggar's lice. Virginia stickseed

Woods and thickets. Common. Summer.

Mertensia virginica (L.) DC.

Lungwort

Banks of the river and along streams. Abundant in some places. May.

Myosotis palustris (L.) Lam.

Forget-me-not

Occasionally escapes from cultivation. May-June.

Myosotis laxa Lehm.

Small forget-me-not

Streams and muddy places. Common. June-July.

Lithospermum arvense L.

Corn gromwell

Along railroads. Barton and Campville. Infrequent. June July.

Symphytum officinale L.

Comfrey

Fields and waste places. Occasional. June.

Lycopsis arvensis L.

Small bugloss

Near Tioga Center. Rare. June-August.

Echium vulgare L.

Blueweed. Viper's bugloss

Along railroads and in waste places at Owego. Common. July.

VERBENACEAE

Verbena urticifolia L.

White vervain

Fields, woods and waste places. Common. July-August.

Verbena hastata L.

Blue vervain

Fields and waste places, specially along streams. Common. July-August.

LABIATAE

Teucrium canadense L.

Wood sage. Germander

Common on the river flats. July-August.

Trichostema dichotomum L.

Blue curls

Plentiful on the river flats opposite Apalachin. August-September.

Scutellaria lateriflora L.

Mad-dog skullcap

Swamps and wet places. Common. August.

Scutellaria galericulata L.

Marsh skullcap

Marshes, borders of ponds and along streams. Common. July-August.

Agastache scrophulariaefolia (Willd.) Kuntze

Lophanthus scrophulariaefolius Benth.

Giant hyssop

Thickets along the river banks. Infrequent. August-September.

Nepeta cataria L.

Catnip. Catmint

Waste places. Common. July-November.

Glecoma hederacea L.

Nepeta glechoma Benth.

Ground ivy. Gill-over-the-ground

Woods, thickets, swamps and waste places. Common. April-May.

Prunella vulgaris L.

Brunella vulgaris L.

Self-heal. Heal-all

Fields, woods and pastures. Very common. June-October.

Galeopsis tetrahit L.

Hemp nettle

Waste places. Common. July-August.

Leonurus cardiaca L.

Motherwort

Waste places about dwellings. Common. July-August.

Lamium amplexicaule L.

Henbit. Dead nettle

Thickets, waste places and cultivated ground. Infrequent. Apalachin and Barton. May-September.

Lamium maculatum L.

Spotted dead nettle

Roadsides at Barton. June-September.

Stachys aspera Michx.

Rough hedge nettle

Low grounds. Not common. July-August.

Monarda didyma L.

Oswego tea. American bee balm

Moist soil, specially along the river and creeks. Common. July-August.

Monarda clinopodia L.

Basil balm

Plentiful on the Marshland farm, in thickets along the river and in Mutton hill pond woods. July.

Monarda fistulosa L.

Wild bergamot

Dry soil in neglected fields. Common. July-August.

Monarda media Willd.

M. fistulosa var. rubra Gray

Purple bergamot

Moist thickets at Barton. Rare. June-August.

Blephilia ciliata (L.) Raf.

Downy blephilia

Thickets near Apalachin. Rare. July-August.

Hedeoma pulegioides (L.) Pers.

American pennyroyal

Dry fields, specially on hills. Abundant. August.

Clinopodium vulgare L.

Calamintha clinopodium Benth.

Wild basil

Woods, fields and thickets. Common. Summer.

Koellia flexuosa (Walt.) MacM.

Pycnanthemum linifolium Pursh

Narrow-leaved mountain mint

Fields near Campville. August.

Koellia virginiana (L.) MacM.

Pycnanthemum lanceolatum Pursh

Virginia mountain mint

Fields near Campville and Barton. August.

Koellia incana (L.) Kuntze

Pycnanthemum incanum Michx.

Hoary mountain mint

Thickets and dry hillsides. More common than the two preceding species. September-October.

Thymus serpyllum L.

Creeping thyme

Old graveyards. Naturalized. Summer.

Lycopus virginicus L.

Bugleweed

Wet soil. Common. August.

Lycopus americanus Muhl.

L. sinuatus Ell.

Cut-leaved water hoarhound

Damp grounds. Common. July-September.

Mentha spicata L.

M. viridis L.

Spearmint

Wet ground and along streams. Common. August.

Mentha piperita L.

Peppermint

Wet soil and along streams. Common. August.

Mentha citrata Ehrh.

Bergamot mint

Roadsides. Occasional. August.

Mentha canadensis L.

American wild mint

Low ground. Common. August-September.

Collinsonia canadensis L.

Horse balm. Richweed. Stoneroot

Moist woods and thickets. Common. August. Its flowers have an odor like that of lemons.

SOLANACEAE

Physalodes physalodes (L.) Britton

Nicandra physalodes Gaertn.

Apple of Peru

Waste places, specially about gardens. August-September.

Physalis philadelphica Lam.

Philadelphia ground cherry

Waste places at Apalachin. Rare. August.

Physalis heterophylla Nees

P. virginiana Mill.

Clammy ground cherry

Cultivated grounds and along railroads. Common. August-September.

Solanum nigrum L.

Black nightshade

Waste ground at Barton. Rare. August-September.

Solanum carolinense L.

Horse nettle

Plentiful in cultivated fields near Apalachin. June-September.

Solanum dulcamara L.

Nightshade. Bittersweet

Waste places, along streams and in swamps, often growing in water. Common. June-September.

Lycium vulgare (Ait.) Dunal

Matrimony vine

About old, deserted dwellings. Frequent. June-August.

Datura stramonium L.

Thorn apple. Jimson weed

Waste grounds. Infrequent. August.

SCROPHULARIACEAE

Verbascum thapsus L.

Great mullen

Dry soil in fields. Common. July.

Verbascum blattaria L.

Moth mullen

Pastures, fields and waysides. Frequent. July-October.

Cymbalaria cymbalaria (L.) Wettst.

Linaria cymbalaria Mill.

Kenilworth ivy

Introduced from Europe but well established at Owego and growing on stone abutments facing the river. June-August.

Linaria linaria (L.) Karst.

L. vulgaris Mill.

Yellow toadflax. Butter and eggs

Fields and waste places. Abundant. June-October. A troublesome weed.

Scrophularia marylandica L.

S. nodosa var. marylandica Gray

Figwort

Fields, thickets and roadsides. Frequent. August.

Scrophularia leporella Bickn.

Hare figwort

With the preceding species but more common. Abundant along the river. June-July.

Chelone glabra L.

Snakehead. Balmony

Swamps and along streams. Common. August-September.

Pentstemon hirsutus (L.) Willd.

P. pubescens Soland.

Hairy beard-tongue

Roadsides and banks in dry soil. Common. June.

Pentstemon digitalis (Sweet) Nutt.

P. laevigatus var. digitalis Gray

Foxglove beard-tongue

In a meadow at Apalachin. Rare. June.

Mimulus ringens L.

Monkey flower

Wet soil, specially along streams. Common. July-September.

Gratiola virginiana L.

Clammy hedge hyssop

Muddy places. Common. June-September.

Ilysanthes gratioloides (L.) Benth.

I. riparia Raf.

False pimpernel

Wet soil on the shores of streams and ponds. Common. August.

Veronica anagallis-aquatica L.

V. anagallis L.

Water speedwell

Plentiful in a ditch opposite Apalachin. June-August.

Veronica americana Schwein.

American brooklime

Swamps, ditches and brooks. Common. May-August.

Veronica scutellata L.

Marsh speedwell

Swamps. Common. May-September.

Veronica officinalis L.

Common speedwell

Dry soil in fields and woods. Common. June-August.

Veronica serpyllifolia L.

Thyme-leaved speedwell

Fields and thickets. Very common. May-July.

Veronica peregrina L.

Purslane speedwell

An abundant weed in cultivated ground. June-September.

Veronica arvensis L.

Corn speedwell

Woods, fields and cultivated ground. Common. May-August.

Veronica byzantina (S. & S.) B. S. P.

V. buxbaumii Tenore

Byzantine speedwell

Waste places and gardens. Frequent. May-September.

Veronica spicata L.

Spiked speedwell

Established in meadow lands near Apalachin. August.

Leptandra virginica (L.) Nutt.

Veronica virginica L.

Culver's root

River flats. Common. June-August.

Dasystoma pedicularia (L.) Benth.

Gerardia pedicularia L.

Fern-leaved false foxglove

Dry soil in woods and thickets. Frequent. August.

Dasystoma flava (L.) Wood

Gerardia flava L.

Downy false foxglove

Dry, open woods and thickets. Common. July-August.

Dasystoma virginica (L.) Britton

Gerardia quercifolia Pursh

Smooth false foxglove

Dry soil in woods and thickets. Frequent. July-August. This and the two preceding species are sometimes found growing together.

Gerardia tenuifolia Vahl

Slender gerardia

Roadsides and coppices on hillsides. Frequent. August-September.

Pedicularis canadensis L.

Wood betony. Lousewort

Dry, open thickets. Common. May-June.

Melampyrum lineare Lam.

M. americanum Michx.

Narrow-leaved cowwheat

Dry woods and thickets. Common. June-August.

LENTIBULARIACEAE

Utricularia vulgaris L.

Common Bladderwort

Still or sluggish waters. Common. July.

OROBANCHACEAE

Thalesia uniflora (L.) Britton

Aphyllon uniflorum Gray

Naked broom rape

Dry thickets near Apalachin. May.

Leptamnium virginianum (L.) Raf.

Epiphegus virginiana Bart.

Beech drops

Under beech trees. Frequent. September-October.

BIGNONIACEAE

Catalpa catalpa (L.) Karst.

C. bignonioides Walt.

Catalpa. Indian bean

Planted as a shade tree, but sometimes becomes spontaneous. July.

ACANTHACEAE

Dianthera americana L.

Water willow

Common in the river from Smithboro westward, but not found in the eastern part of our range. July-August.

PHRYMACEAE

Phryma leptostachya L.

Lopseed

Woods and thickets. Frequent. July-August.

PLANTAGINACEAE

Plantago major L.

Common plantain

Waste places. Common. Summer.

Plantago rugelii Dec.

Rugel's plantain

Waste places. Common. Summer.

Plantago lanceolata L.

English plantain. Ribgrass

Waste places and grass lands. Very common. May-October.

Plantago aristata Michx.

Recently introduced into a grain field and now spreading rapidly. June-September.

Plantago virginica L.

Dwarf plantain

Meadows 1 mile south of Barton. Plentiful. May-June.

RUBIACEAE

Houstonia coerulea L.

Bluets. Innocence

Meadows and pastures, specially in moist soil. Common. July.

Galium trifidum L.

Small bedstraw

Bogs and cold swamps. Frequent. Summer.

CAPRIFOLIACEAE

Sambucus canadensis Michx.

Sweet elder

Roadsides, fence rows and bottom lands. Common. July.

Sambucus pubens Michx.

S. racemosa L.

Red-berried elder

Moist soil in rocky woods. Common. May.

Viburnum alnifolium Marsh.

V. lantanoides Michx.

Hobblebush

Low woods Frequent. May.

Viburnum opulus L.

High bush cranberry. Cramp bark

Swamps near Barton. Infrequent. June.

Viburnum acerifolium L.

Maple-leaved arrowwood. Dockmackie

Dry, rocky woods. Common. June.

Viburnum pubescens (Ait.) Pursh

Downy-leaved arrowwood

Rocky woods. Common. June.

Viburnum dentatum L.

Arrowwood

Borders of swamps. Common. June.

Viburnum cassinoides L.

Withe-rod. Appalachian tea

Swamps and low ground. Common, June.

Viburnum lentago L.

Nannyberry. Sheepberry

Low ground. Common. May.

Triosteum perfoliatum L.

Feverwort. Horse gentian

Borders of woods, specially along the river. Frequent. June.

Linnaea borealis L.

Twin flower

Damp, shrubby field near Apalachin. Rare. June.

Symphoricarpus racemosus Michx.

Snowberry

Plentiful along the river banks at Barton, also frequent by roadsides where it has escaped from cultivation. June-August.

Lonicera dioica L.

L. glauca Hill

Glaucous honeysuckle

Dry soil in thickets and along fences. Frequent. June.

Lonicera ciliata Muhl.

Fly honeysuckle

Moist woods. Common. May.

Lonicera tatarica L.

Tartarian bush honeysuckle

Roadsides. Escaped from cultivation. May.

Diervilla diervilla (L.) MacM.

D. trifida Moench

Bush honeysuckle

Dry, rocky, woodland roadsides and fence rows. Common. June.

VALERIANACEAE

Valerianella chenopodifolia (Pursh) DC.

Goosefoot corn salad

Moist meadows along the river. Frequent. June-July.

Valerianella radiata (L.) Dufr.

Beaked corn salad

Bottom land at Barton. Frequent. June-July.

DIPSACACEAE

Dipsacus sylvestris Huds.

Card teasel

Waste places. Common. July-August.

CUCURBITACEAE

Micrampelis lobata (Michx.) Greene

Echinocystis lobata T. & G.

Wild balsam apple

River banks and waste places. Common. July-August.

Sicyos angulatas L.

Star cucumber

River banks and waste places. Common. July-September.

CAMPANULACEAE

Campanula rotundifolia L.

Harebell

Rocks near Barton. Rare. July-August.

Campanula rapunculoides L.

European bellflower

Roadsides and about old dwellings. Common. July-September.

Campanula aparinoides Pursh

Marsh bellflower

Wet, grassy places. Common. July-August.

Legouzia perfoliata (L.) Britton

Specularia perfoliata A. DC.

Venus looking-glass

Fields, roadsides and in cultivated soil. Common. June.

Lobelia cardinalis L.

Cardinal flower

Shores of streams. Common. July-August.

Lobelia syphilitica L.

Great lobelia

Wet meadows and borders of swamps. Frequent. August.

Lobelia spicata Lam.

Spiked lobelia

Meadows and pastures. Common. July.

Lobelia inflata L.

Indian tobacco

Fields and thickets. Common. July.

CICHORIACEAE

Cichorium intybus L.

Chicory

Fields and roadsides. Frequent. August.

Tragopogon pratensis L.

Goat's beard

Frequent along railroads. Summer.

Tragopogon porrifolius L.

Oyster plant. Salsify

Escapes from cultivation. Summer.

Taraxacum taraxacum (L.) Karst.

T. officinale Weber

Dandelion

Fields and waste places. Very common. April-December.

Taraxacum erythrospermum Andrz.

Red-seeded dandelion

Fields and waste places. Common. Easily distinguished from the last by its brownish red seeds.

Sonchus oleraceus L.

Annual sow thistle

Waste places, specially along railroads. Common. June-October.

Sonchus asper (L.) All.

Spiny sow thistle

With the last. Common. June-October.

Lactuca virosa L.

Prickly lettuce

Waste places. Common. August-September. A very troublesome weed, which is fast spreading.

Lactuca canadensis L.

Tall lettuce

Thickets and fence rows. Common. July-September.

Lactuca villosa Jacq.

L. acuminata Gray

Blue lettuce

Thickets. Frequent. August.

Lactuca spicata (Lam.) Hitch.

L. leucophaea Gray

Tall blue lettuce

Moist soil. Common. August-September.

Hieracium aurantiacum L.

Orange hawkweed. Paint brush

Fields. It often forms dense patches. Common. June-September.

Hieracium praealtum Vill.

King devil

In a meadow near Apalachin. Rare. June-August.

Hieracium venosum L.

Rattlesnake weed

Dry woods and thickets. Common. June-August.

Hieracium canadense Michx.

Canada hawkweed

Dry woods and thickets. Frequent. August.

Hieracium paniculatum L.

Panicled hawkweed

Dry, open woods. Common. August.

Hieracium scabrum Michx.

Rough hawkweed

Dry soil in woods and clearings. Common. August.

Nabalus altissimus (L.) Hook.

Prenanthes altissima L.

Tall white lettuce

Woods and thickets. Common. August-October.

Nabalus albus (L.) Hook.

Prenanthes alba L.

White lettuce. Rattlesnake root

Thickets and borders of woods. Common. August-September.

Nabalus serpentarius (Pursh) Hook.

Prenanthes serpentaria Pursh

Lion's foot. Gall-of-the-earth

Thickets and open woods. Common. August-September.

AMBROSIACEAE

Ambrosia trifida L.

Great ragweed

Abundant along the river banks. August-September.

Ambrosia trifida integrifolia (Muhl.) T. & G.

With the type. Frequent.

Ambrosia artemisiaefolia L.

Ragweed. Hogweed

Cultivated soil and waste places. A very common weed. August-September.

Xanthium canadense Mill.

American cocklebur

River banks, along streams and in waste places. Common. August-September.

Xanthium strumarium L.

Bur weed

Waste places. Occasional. August-September.

COMPOSITAE

Eupatorium purpureum L.

Trumpetweed. Gravelroot

Moist soil. Common. August-September.

Eupatorium purpureum falcatum (Michx.) Britton

With the type, specially along the river.

Eupatorium perfoliatum L.

Boneset. Thoroughwort

Wet places. Common. August-September.

Eupatorium perfoliatum truncatum (Muhl.) Gray

Vicinity of Apalachin. Infrequent.

Eupatorium ageratoides L.f.

White snakeroot

Woods and thickets. Common. Occasional in shaded places near dwellings. August-September.

Solidago squarrosa Muhl.

Stout ragged goldenrod

Dry, rocky soil on hilltops and along roadsides. Common. September.

Solidago caesia L.

Blue-stemmed goldenrod

Woods and thickets. Common. August-September.

Solidago caesia axillaris (Pursh) Gray

Woods and thickets. Common.

Solidago flexicaulis L.

S. latifolia L.

Broad-leaved goldenrod

Rich, moist woods and thickets. Common. August-September.

Solidago bicolor L.

White goldenrod

Thickets and roadsides. Common. August-September.

Solidago hispida Muhl.

S. bicolor var. concolor T. & G.

Hairy goldenrod

Dry soil in thickets. Frequent. August-September.

Solidago rugosa Mill.

Rough goldenrod

Fields, fence rows and roadsides. Very common. August-September.

Solidago patula Muhl.

Rough-leaved goldenrod

Swamps at Apalachin and Barton. Infrequent. September.

Solidago ulmifolia Muhl.

Elm-leaved goldenrod

Woods, coppices and dry slopes. Infrequent. August-September.

Solidago juncea Ait.

Early goldenrod

Dry, rocky soil of fields and banks. Common. July. This is our earliest blooming species and is sometimes found in flower late in June.

Solidago arguta Ait.

Cut-leaved goldenrod

Moist thickets. Frequent. July-September.

Solidago serotina Ait.

Smooth goldenrod

Moist soil. Common. August-September.

Solidago serotina gigantea (Ait.) Gray

With the type and nearly as common. August-September.

Solidago canadensis L.

Canada goldenrod

Old fields, fence rows and roadsides. Abundant. August-September.

Solidago nemoralis Ait.

Field goldenrod

Poor, rocky soil in old fields. Very common. August-September.

Euthamia graminifolia (L.) Nutt.

Solidago lanceolata L.

Narrow-leaved goldenrod

Fields and roadsides. Very common. August.

Sericocarpus asteroides (L.) B. S. P.

S. conyzoides Nees

White-topped aster

Dry woods. Frequent. August.

Aster divaricatus L.

A. corymbosus Ait.

White wood aster

Open woodland and thickets. Common. September.

Aster curvescens Burgess

Dome-topped aster

Moist, shaded soil. Common. September.

Aster macrophyllus L.

Large-leaved aster

Woods and thickets. Common. August. A species having many different forms.

Aster ianthinus Burgess

Violet wood aster

Wooded banks and paths. Frequent. August-September.

Aster cordifolius L.

Common blue wood aster

Open woods, fence rows, thickets and specially along woodland roads. Common. September-November.

Aster cordifolius polycephalus Porter

With the type. Occasional.

Aster lowrieanus Porter

Lowrie's aster

Woods. Common. September-October.

Aster lowrieanus lancifolius Porter

With the type.

Aster undulatus L.

Wavy-leaf aster

Dry soil. Common. September.

Aster undulatus loriformis Burgess

With the type. Common. September.

Aster patens Ait.

Late purple aster

Dry, open places. Frequent. September.

Aster novae-angliae L.

New England aster

Fields and fence rows. Common. August-September. A splendid species.

Aster puniceus L.

Purple-stem aster

Swamps and wet places. Common. September.

Aster puniceus firmus (Nees) T. & G.

Aster puniceus var. laevicaulis Gray

With the type. Frequent. September.

Aster prenanthoides Muhl.

Crooked-stem aster

Moist soil. Common. September-October.

Aster laevis L.

Smooth aster

Borders of woods and thickets. Common. September. A beautiful species.

Aster acuminatus Michx.

Mountain aster

Moist woods. Common. August-September.

Aster paniculatus Lam.

Tall white aster

Moist soil. Common. September.

Aster ericoides L.

White heath aster

Dry soil. Common. September-November.

Aster lateriflorus (L.) Britton

A. diffusus Ait.

Starved aster

Fields, roadsides and thickets. Common. September.

Aster vimineus Lam.

Small white aster

Borders of thickets. Frequent. September.

Erigeron pulchellus Michx.

E. bellidifolius Muhl.

Robin's plantain

Banks. Common. May.

Erigeron philadelphicus L.

Philadelphia fleabane

Moist, grassy fields and woods. Common. May-June.

Erigeron annuus (L.) Pers.

Sweet scabious

Fields and roadsides. Common. May-October.

Erigeron ramosus (Walt.) B. S. P.

E. strigosus Muhl.

Daisy fleabane

A common weed in meadows. June-September.

Leptilon canadense (L.) Britton

Erigeron canadensis L.

Canada fleabane. Horseweed

A very common weed in fields and waste places. July-September.

Doellingeria umbellata (Mill.) Nees

Aster umbellatus Mill.

Tall flat-top white aster

Moist soil near Apalachin. August.

Doellingeria infirma (Michx.) Greene

Aster infirmus Michx.

Cornel-leaved aster

Dry, rocky soil in woods and thickets. Frequent. August-September.

Antennaria neglecta Greene

Field cat's-foot

Pastures. Common. April-May.

Antennaria plantaginifolia (L.) Richards.

Plantain-leaf everlasting

Woods and old fields. Common. April-May.

Anaphalis margaritacea (L.) B. & H.

Pearly everlasting

Old fields. Common. August.

Gnaphalium obtusifolium L.

G. polycephalum Michx.

White balsam

Dry, open places. Common. August.

Gnaphalium decurrens Ives

Clammy everlasting

Dry, open places. Common. August.

Gnaphalium uliginosum L.

Low cudweed

Damp soil, specially along roadsides. Common. August.

Inula helenium L.

Elecampane

Fields, roadsides and along streams in woods. Common. August.

Polymnia canadensis L.

Small-flowered leafcup

"Hog back" near Apalachin. Rare. August.

Heliopsis helianthoides (L.) B. S. P.

H. laevis Pers.

Oxeye

Common on the banks of the river and along streams. August.

Rudbeckia hirta L.

Black-eyed susan. Yellow daisy

Meadows and pastures. Common. June-August.

Rudbeckia laciniata L.

Tall coneflower

Damp soil in thickets. Common. July-August.

Helianthus annuus L.

Common sunflower

Waste places. Frequent. August.

Helianthus divaricatus L.

Rough sunflower

Dry thickets. Common. July-August.

Helianthus decapetalus L.

Thin-leaved sunflower

Along the river and in moist woods. Common. August-September.

Helianthus strumosus L.

Wood sunflower

Plentiful in a thicket near Apalachin. August-September.

Helianthus tuberosus L.

Jerusalem artichoke

River banks and waste places. Common. September. Apparently indigenous in the river valley.

Bidens laevis (L.) B. S. P.

B. chrysanthemoides Michx.

Larger bur marigold

Swamps, ditches and wet meadows. Common. August-September.

Bidens cernua L.

Smaller bur marigold

Wet soil. Common. August-September.

Bidens connata Muhl.

Swamp beggar ticks

Swamps and moist soil. Common. August-September.

Bidens frondosa L.

Beggar ticks. Stick-tight

Damp soil in fields. Very common. August-September.

Galinsoga parviflora Cav.

Galinsoga

Dooryards and waste places at Owego and Waverly. Plentiful. August-September.

Helenium autumnale L.

Sneezeweed

Banks of the river, along streams and in swamps. Common. September-October.

Achillea millefolium L.

Yarrow. Milfoil

Fields, pastures and roadsides. Common. June-September.

Anthemis cotula L.

Mayweed

Fields, waste places and roadsides. Common. June-September.

Anthemis arvensis L.

Corn camomile

Fields, specially on the river flats. Common. May-June.

Chrysanthemum leucanthemum L.

White daisy

Meadows and fields. Abundant. May-August.

Chrysanthemum parthenium (L.) Pers.

Common feverfew

Frequent in waste places at Apalachin. Summer. Escapes from cultivation in gardens.

Tanacetum vulgare L.

Tansy

Fields, roadsides and along streams. Common. August-September.

Artemisia absinthium L.

Wormwood

Waste places at Barton. July-September.

Artemisia vulgaris L.

Common mugwort

Waste places at Barton. July-September.

Tussilago farfara L.

Coltsfoot

Moist soil by roadsides. Infrequent. April-May.

Erechtites hieracifolia (L.) Raf.

Fireweed

Woodland and thickets, specially in recent clearings and burnt districts. Common. August-September.

Synosma suaveolens (L.) Raf.

Cacalia suaveolens L.

Sweet-scented Indian plantain

Alluvial soil and woods along the river. Frequent. September.

Senecio aureus L.

Golden ragwort. Liferoot

Swamps, wet meadows and along streams. Common. May-June.

Arctium lappa L.

Burdock

Waste places. Frequent. July-September.

Arctium minus Schk.

Common burdock

Waste places, specially about dwellings. Common. July-October.

Carduus lanceolatus L.

Cnicus lanceolatus Hoffm.

Common bur thistle

Fields and waste places. Common. July-October.

Carduus discolor (Muhl.) Nutt.

Cnicus altissimus var. discolor Gray

Field thistle

Plentiful in fields along the river. July-October.

Carduus odoratus (Muhl.) Porter

Cnicus pumilus Torr.

Pasture thistle. Fragrant thistle

Fields. Frequent. July-August.

Carduus muticus (Michx.) Pers.

Cnicus muticus Pursh

Swamp thistle

Swamps and along streams. Common. August.

Carduus arvensis (L.) Robs.

Cnicus arvensis Hoffm.

Canada thistle

Abundant in fields and waste places. July-September.

EXPLANATION OF PLATES

PLATE M

Hygrophorus subrufescens Pk.

REDDISH HYGROPHORUS

1, 2 Two plants with convex cap
3, 4 Two plants with margin of cap curved upward
5 Vertical section of the upper part of a mature plant
6 Four spores × 400

Collybia uniformis Pk.

UNIFORM COLLYBIA

7 Cluster of four plants growing from the upper surface of a piece of wood, two of them young, two mature
8 Cluster of three mature plants growing from the lateral surface of a piece of wood
9-11 Three mature plants, one with curved stem
12 Vertical section of the upper part of a mature plant with fully expanded cap
13 Transverse section of a stem
14 Vertical section of the upper part of a plant with convex cap
15 Transverse section of a compressed stem
16 Four spores × 400

Mycena rugosoides Pk.

WRINKLED MYCENA

17-19 Three plants with dark brown caps, two moist, one dry, two with caps umbonate
20 Vertical section of the upper part of a plant
21 Transverse section of a stem
22 Four spores × 400
23-25 Three plants with grayish brown caps, one moist, two dry, two with caps umbonate
26 Vertical section of the upper part of a plant
27 Transverse section of a stem
28 Four spores × 400
29-31 Three plants with whitish caps, one moist, two dry, two with caps umbonate
32 Vertical section of the upper part of a plant
33 Transverse section of a stem
34 Four spores × 400

Flammula pusilla Pk.

SMALL FLAMMULA

35, 36 Two immature plants
37 Mature plant with convex cap
38 Mature plant with plane cap
39 Vertical section of the upper part of an immature plant
40 Vertical section of the upper part of a mature plant
41 Four spores × 400

PLATE N

Russula magnifica Pk.

MAGNIFICENT RUSSULA

1 Small immature plant
2 Mature plant of medium size
3 Vertical section of the upper part of a mature plant
4 Four spores × 400

Russula earlei Pk.

EARLE'S RUSSULA

5 Immature plant
6, 7 Mature plants with convex caps
8 Mature plant with cap nearly plane
9 Vertical section of the upper part of a plant
10 Four spores × 400

PLATE 82

Tricholoma silvaticum Pk.

WOOD TRICHOLOMA

1, 2 Two plants with umbonate caps
3 Plant with convex cap
4 Plant with plane cap
5 Vertical section of the upper part of a plant
6 Four spores × 400

Tricholoma subacutum Pk.

SUBACUTE TRICHOLOMA

7 Immature plant with grayish brown cap
8 Mature plant with grayish brown cap
9-11 Three plants with blackish brown fibrillose caps
12 Vertical section of the upper part of an immature plant
13 Vertical section of the upper part of a mature plant
14 Four spores × 400

Tricholoma radicatum Pk.

ROOTED TRICHOLOMA

15, 16 Two plants with smoothish caps
17 Plant with minutely scaly cap
18 Vertical section of the upper part of a plant
19 Four spores × 400

PLATE 83

Hygrophorus pudorinus Fr.

BLUSHING HYGROPHORUS

1 Cluster of four young plants
2 Mature plant with convex cap
3 Mature plant with slightly umbonate cap
4 Vertical section of the upper part of a young plant
5 Vertical section of the upper part of a mature plant
6 Four spores × 400

Lactarius luteolus Pk.

YELLOWISH LACTARIUS

7 Immature plant
8 Mature plant with even cap
9 Mature plant with cap rugose
10 Vertical section of the upper part of a plant
11 Four spores × 400

Lactarius subdulcis Fr.

SWEET LACTARIUS

12 Immature plant
13-15 Mature plants, two having caps with a small umbo
16 Mature plant with margin of cap wavy
17 Vertical section of the upper part of a plant
18 Transverse section of a stem
19 Four spores × 400

Lactarius subdulcis oculatus Pk.

EYE-SPOT LACTARIUS

20 Immature plant
21, 22 Mature plants
23 Vertical section of the upper part of a plant
24 Four spores × 400

PLATE 84

Russula crustosa Pk.

CRUSTED RUSSULA

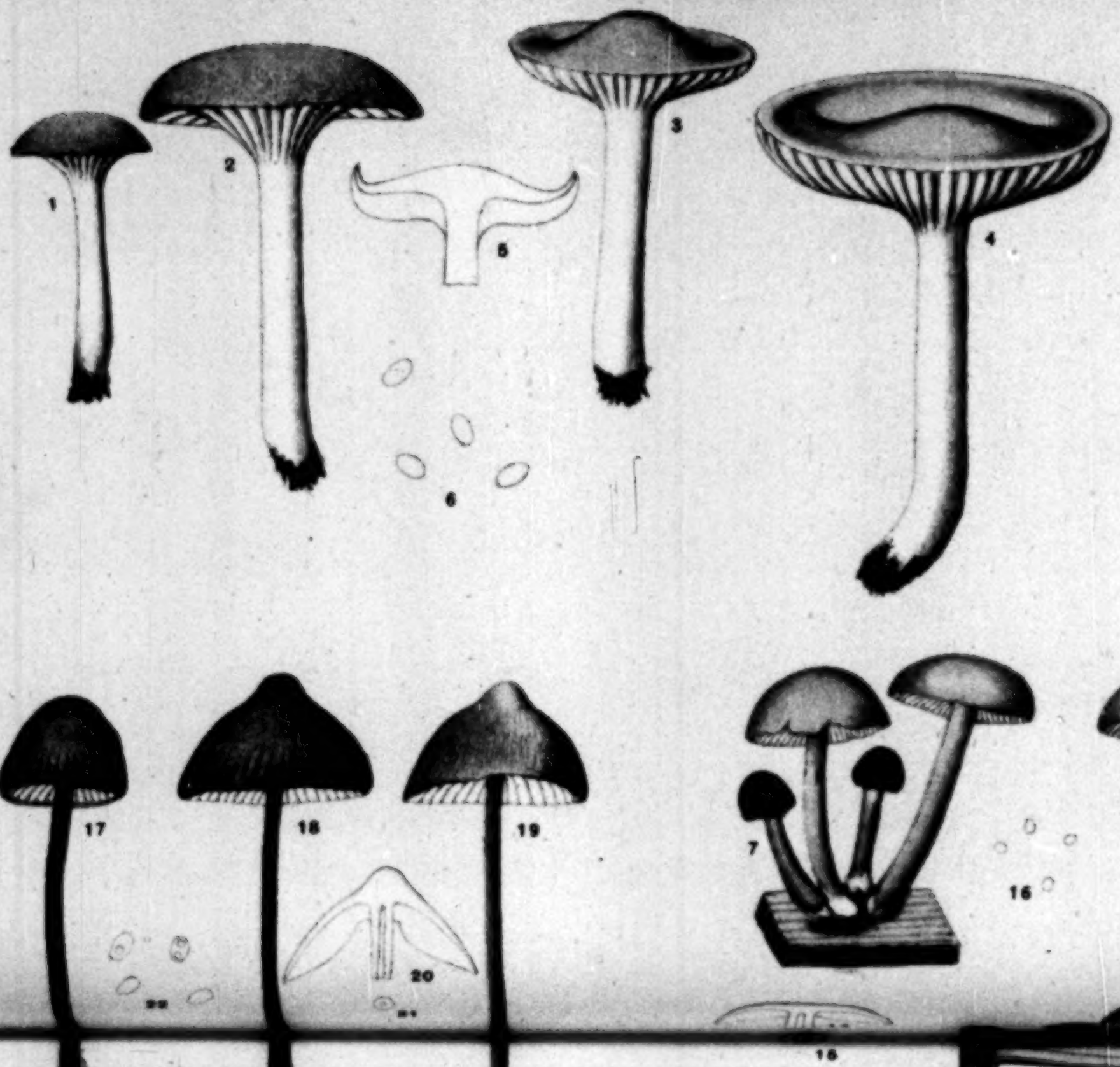
1 Immature plant
2 Mature plant with striated margin of cap
3 Mature plant with even margin of cap tinged with green
4 Mature plant with plane cap
5 Vertical section of the upper part of a young plant
6 Vertical section of the upper part of a mature plant
7 Four spores × 400

Cantharellus dichotomus Pk.

FORKED CHANTARELLE

8-10 Three plants with dark gray umbonate caps, two of them with reddish stains on the stems
11, 12 Two plants with pale gray caps, one with a small umbo
13 Plant with a grayish brown, wavy, margined cap
14, 15 Vertical sections of the upper part of two plants
16 Four spores × 400
17-20 Four plants with short stems
21 Diagrammatic representation of the forking of the gills

FUNGI



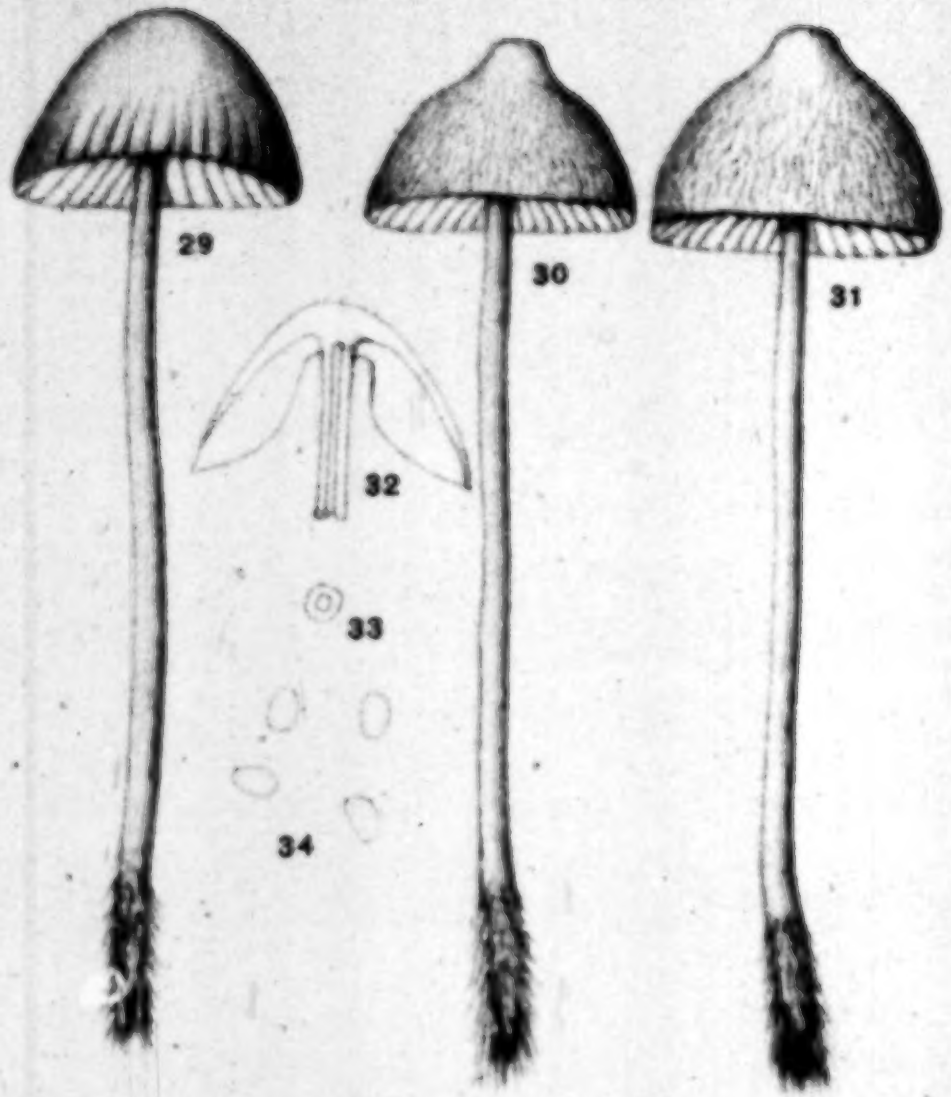


FIG. 1-6 HYGROPHORUS SUBRUFESCENS PK.
REDDISH HYGROPHORUS

FIG. 17-34 MYCENA RUGOSOIDES PK.
WRINKLED MYCENA

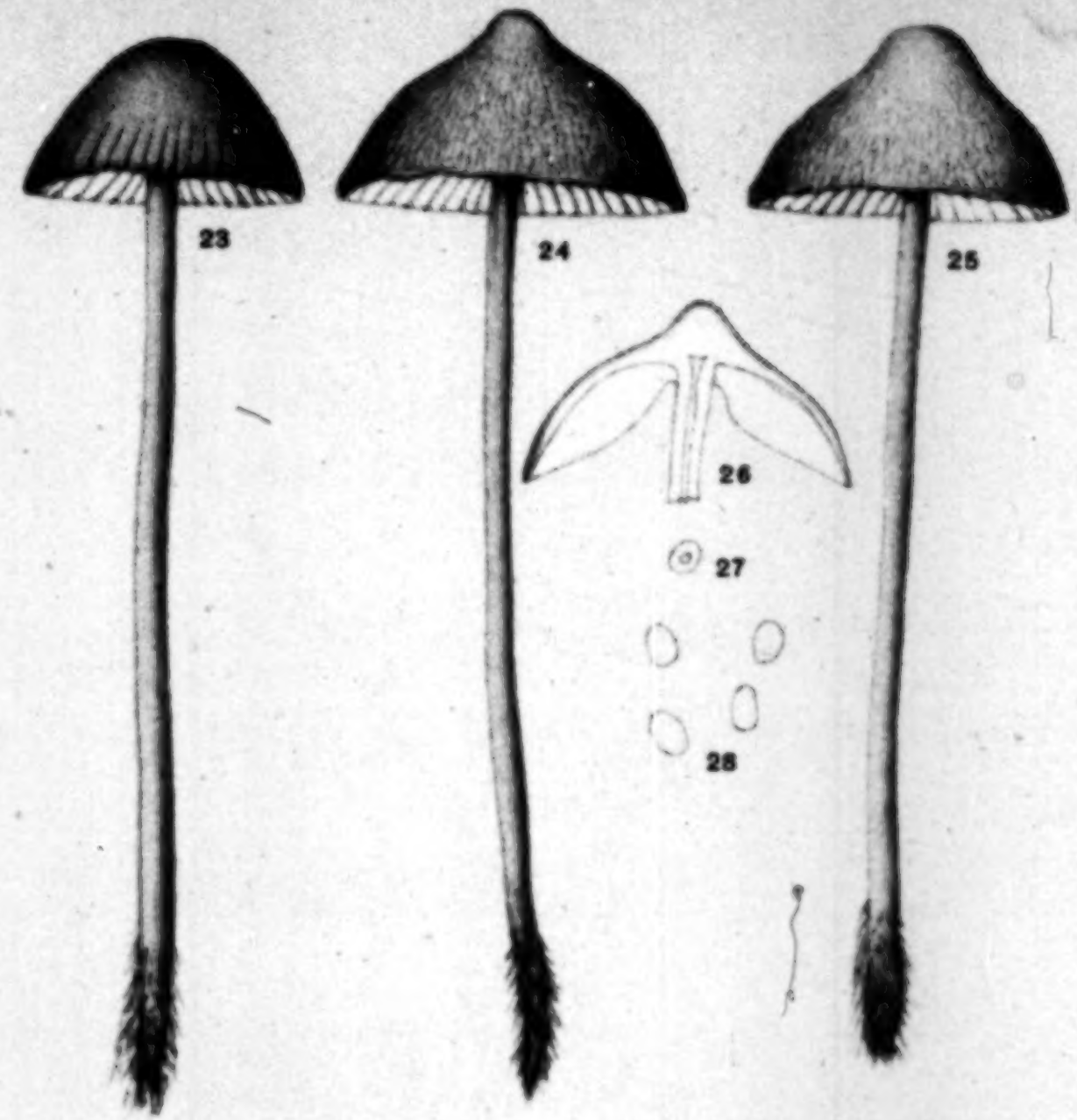


FIG. 7-16 COLLYBIA UNIFORMIS PK.
UNIFORM COLLYBIA

FIG. 35-41 FLAMMULA PUSILLA PK.
SMALL FLAMMULA

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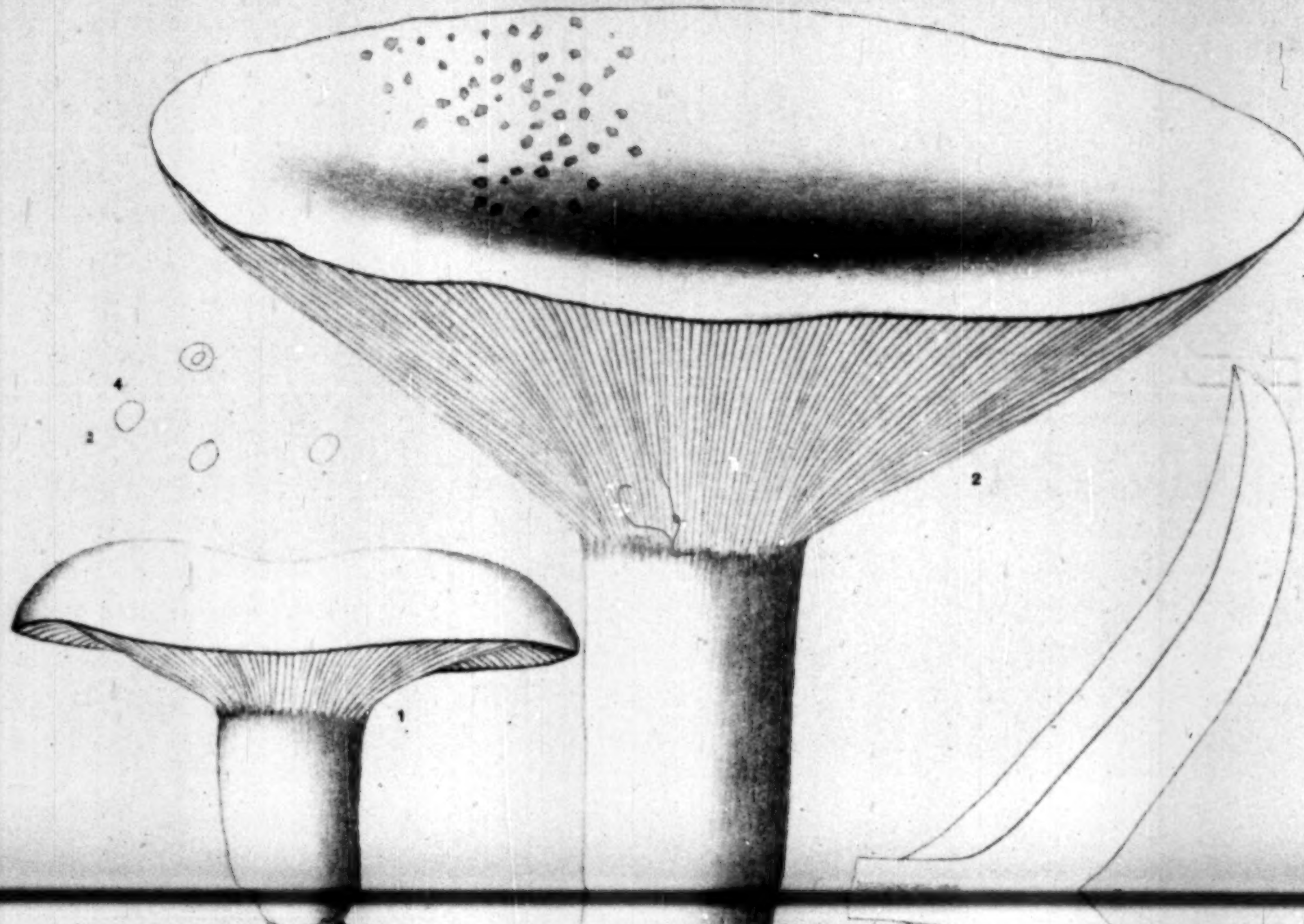
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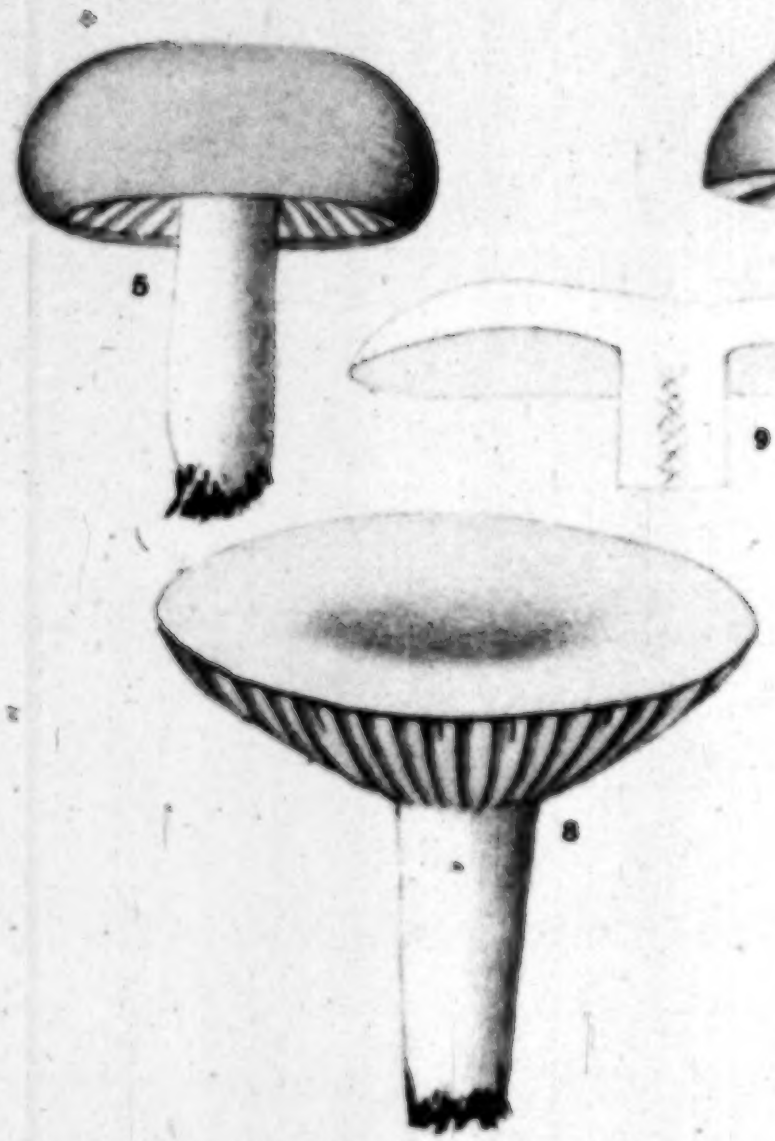

FIG. 1-4 RUSSULA MAGNIFICA PK.

MAGNIFICENT RUSSULA

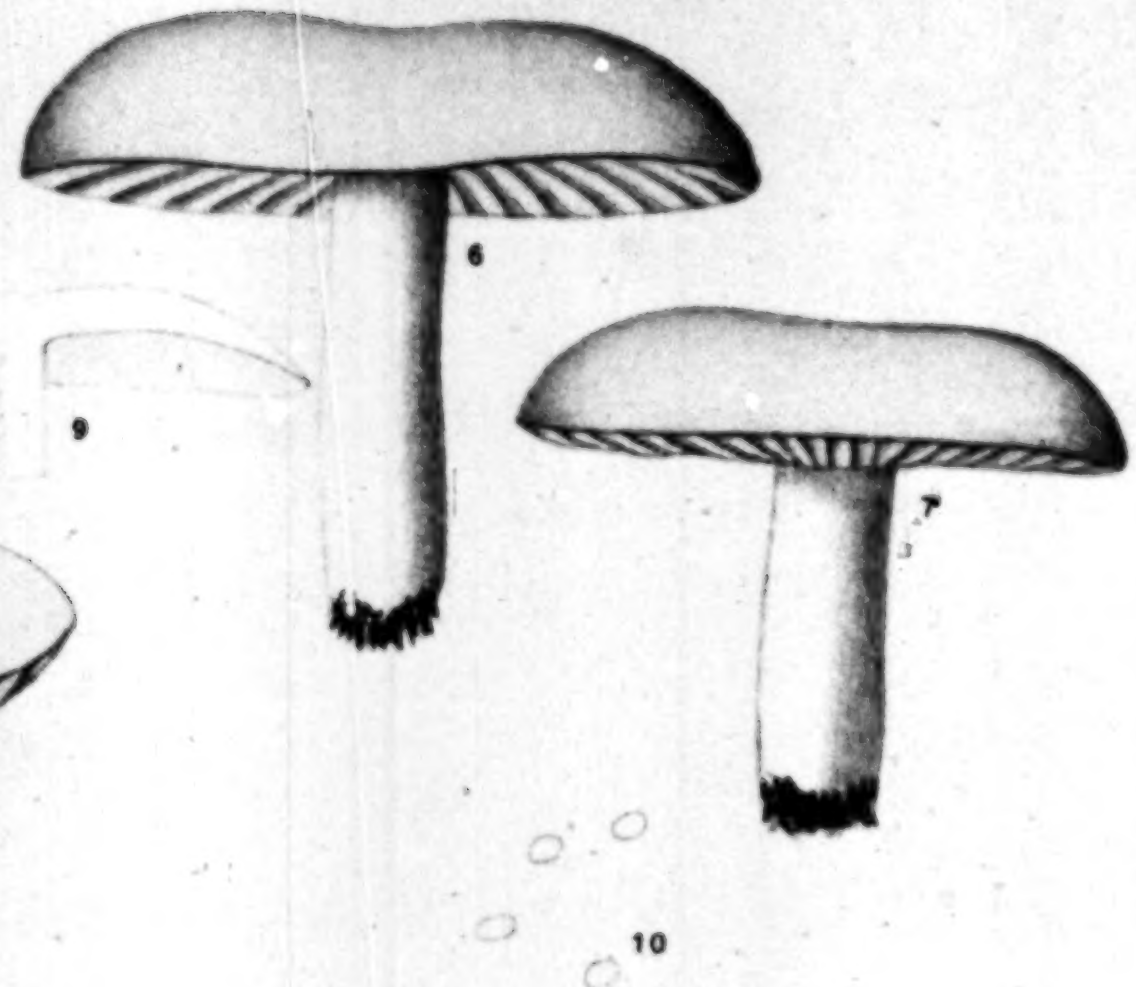

FIG. 5-10 RUSSULA EARLEI PK.

EARLE'S RUSSULA

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N. Y. STATE MUS. 56

EDIBLE FUNGI

PLATE 82

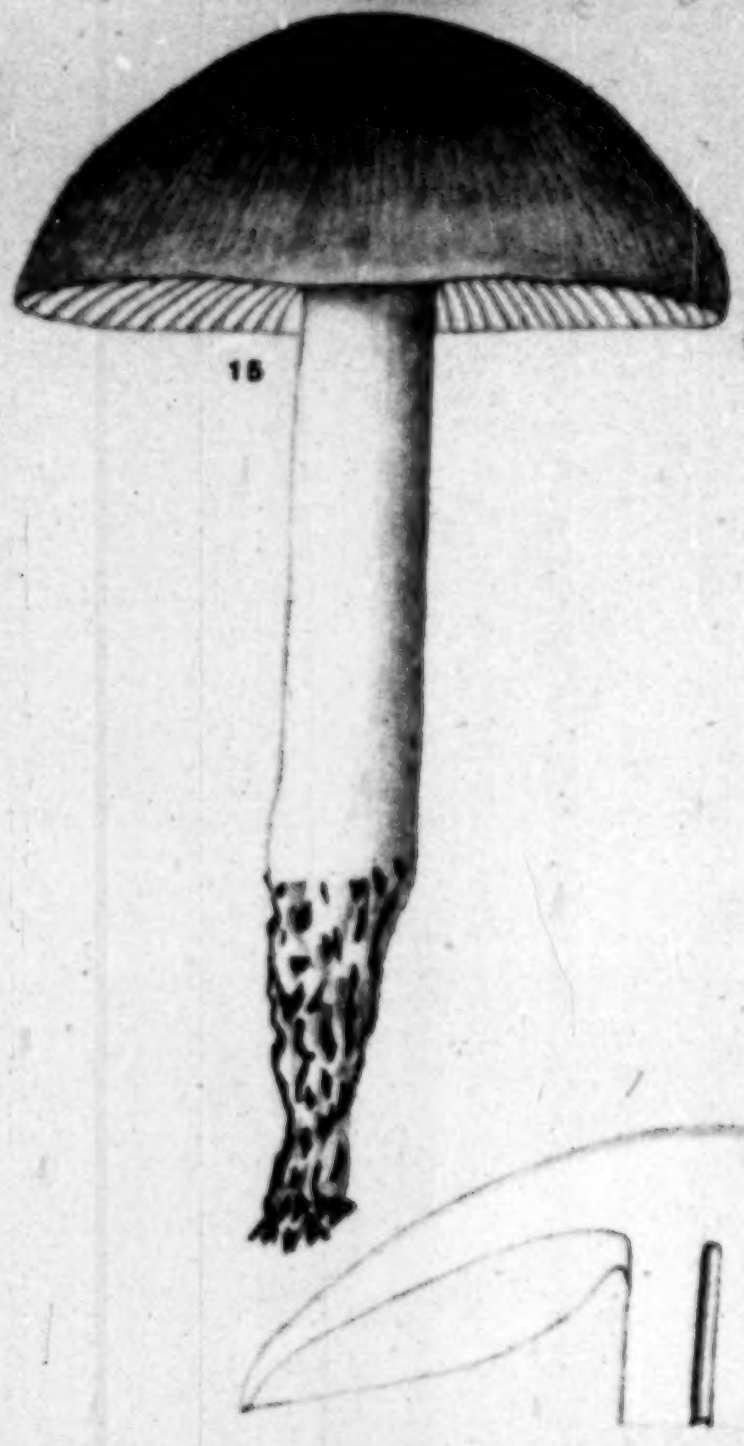

FIG. 1-6 TRICHOLOMA SILVATICUM PK.
WOOD TRICHOLOMA

FIG. 7-14 TRICHOLOMA SUBACUTUM PK.
SUBACUTE TRICHOLOMA

FIG. 15-19 TRICHOLOMA RADICATUM PK.
ROOTED TRICHOLOMA

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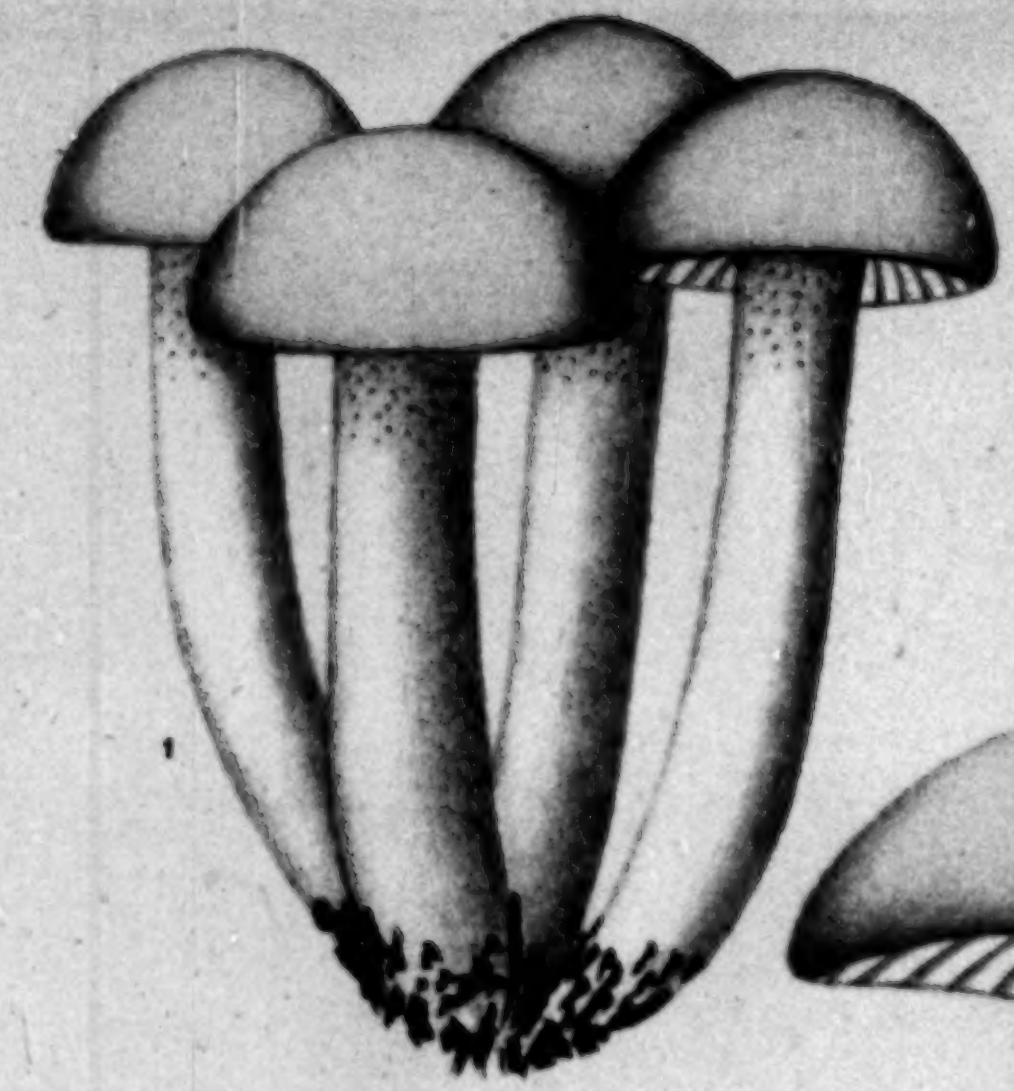
EDIBLE FUNGI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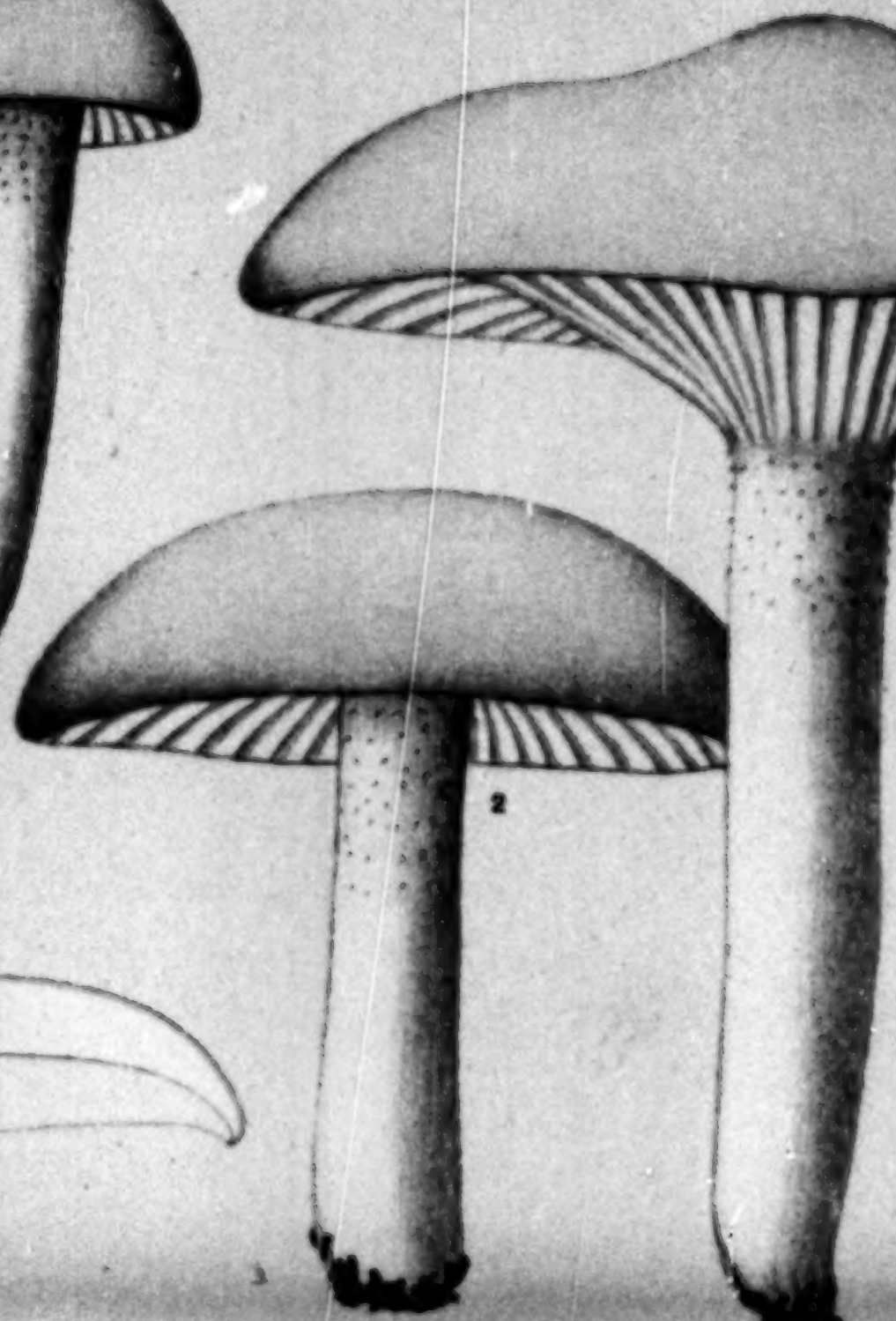
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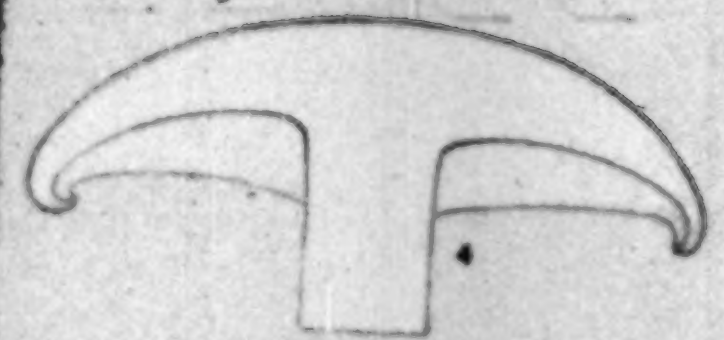
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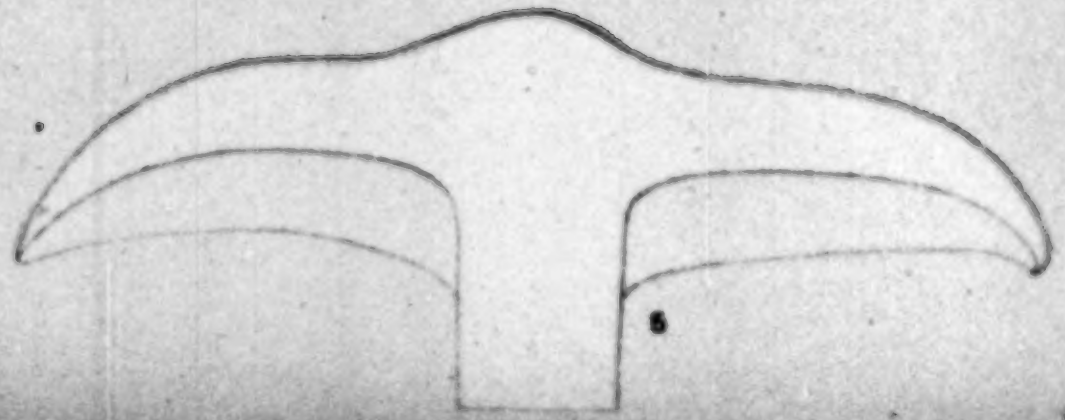
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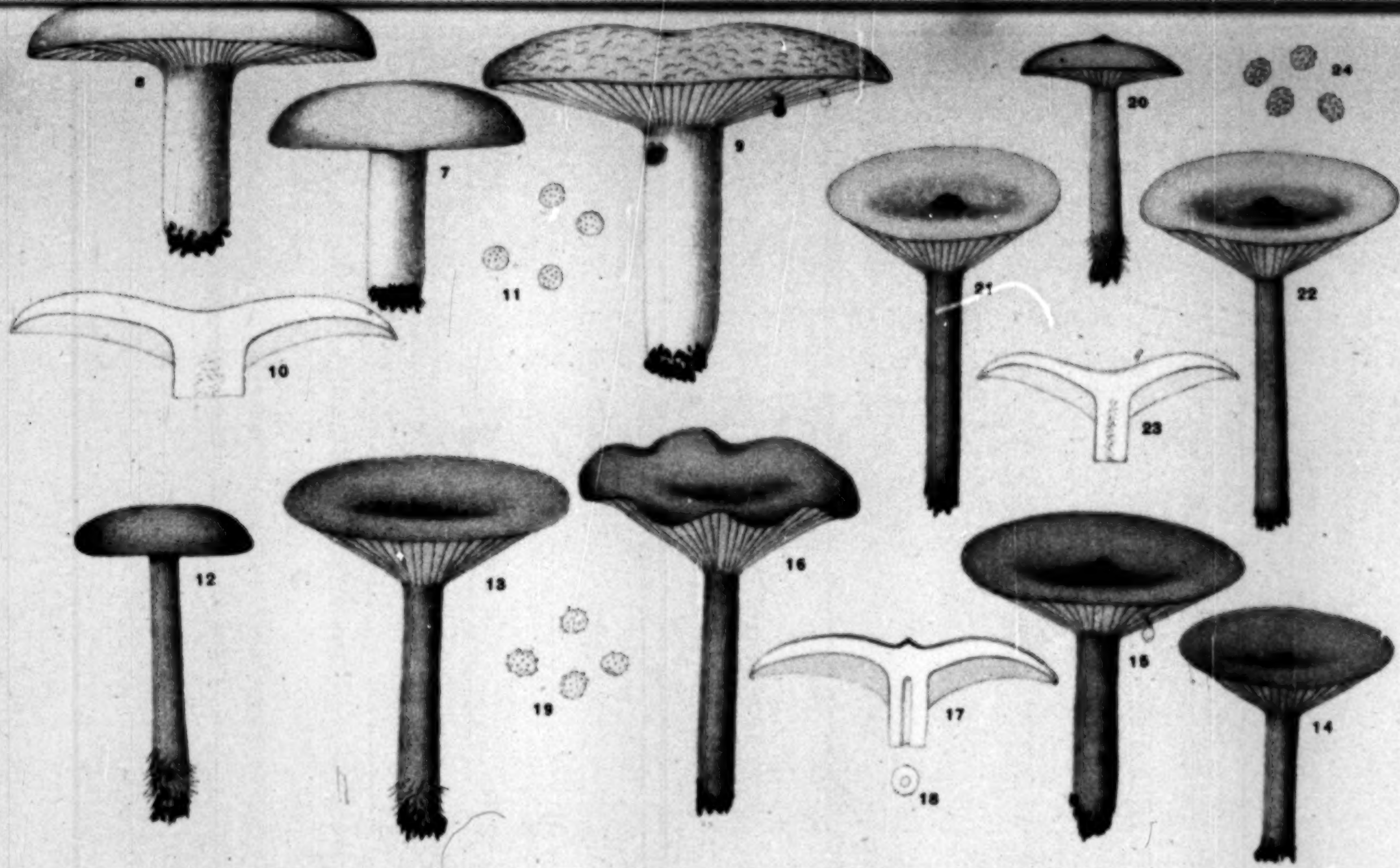

FIG 1-6 HYGROPHORUS PUDORINUS FR.
BLUSHING HYGROPHORUS

FIG. 12-19 LACTARIUS SUBDULCIS FR.
SWEET LACTARIUS

FIG. 7-11 LACTARIUS LUTEOLUS PK.
YELLOWISH LACTARIUS

FIG. 20-24 LACTARIUS SUBDULCIS OCULATUS PK.
EYE SPOT LACTARIUS

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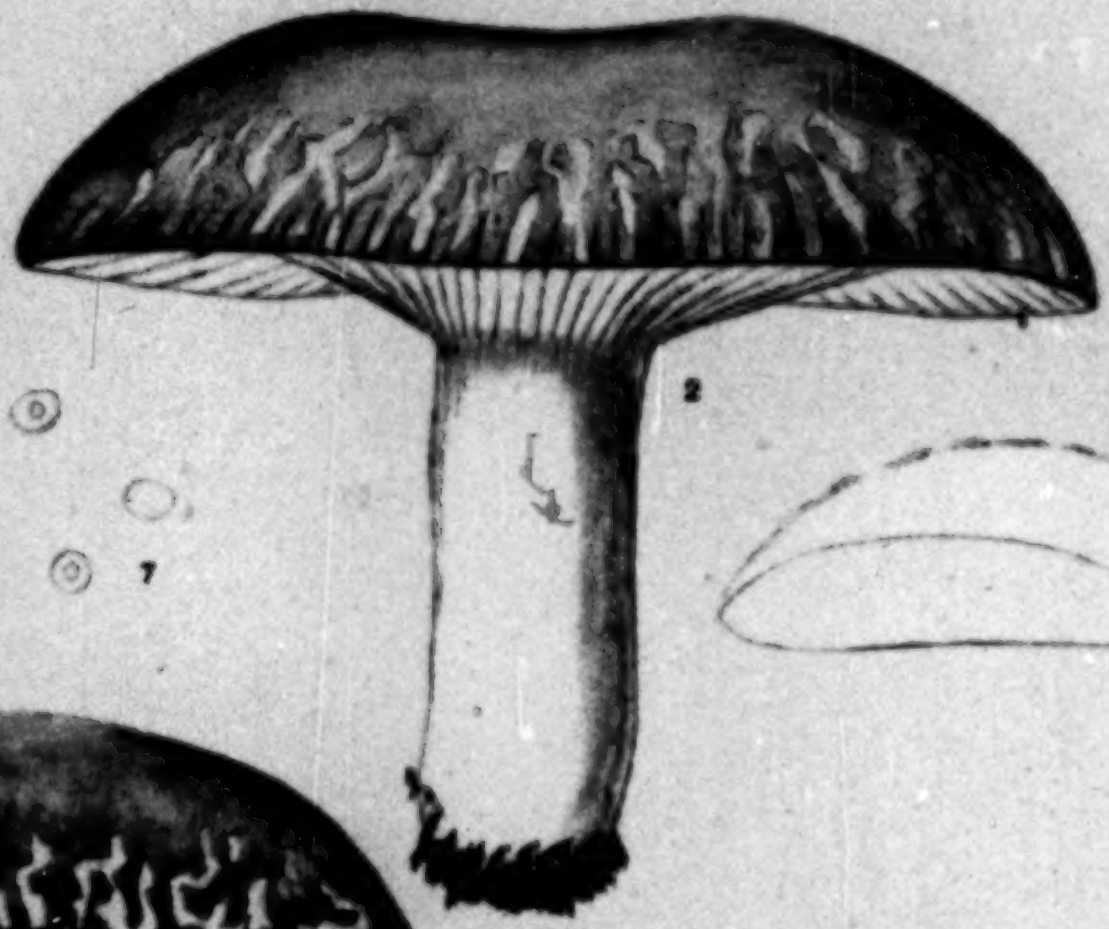
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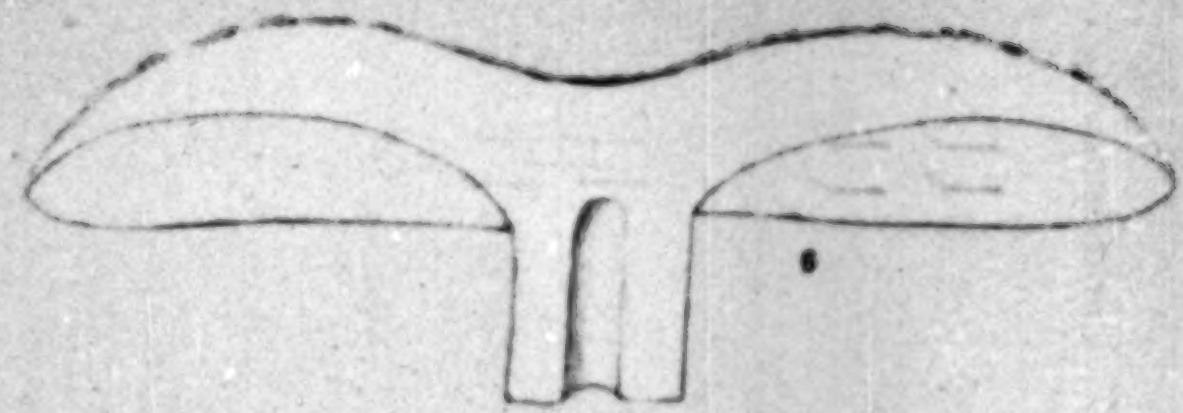
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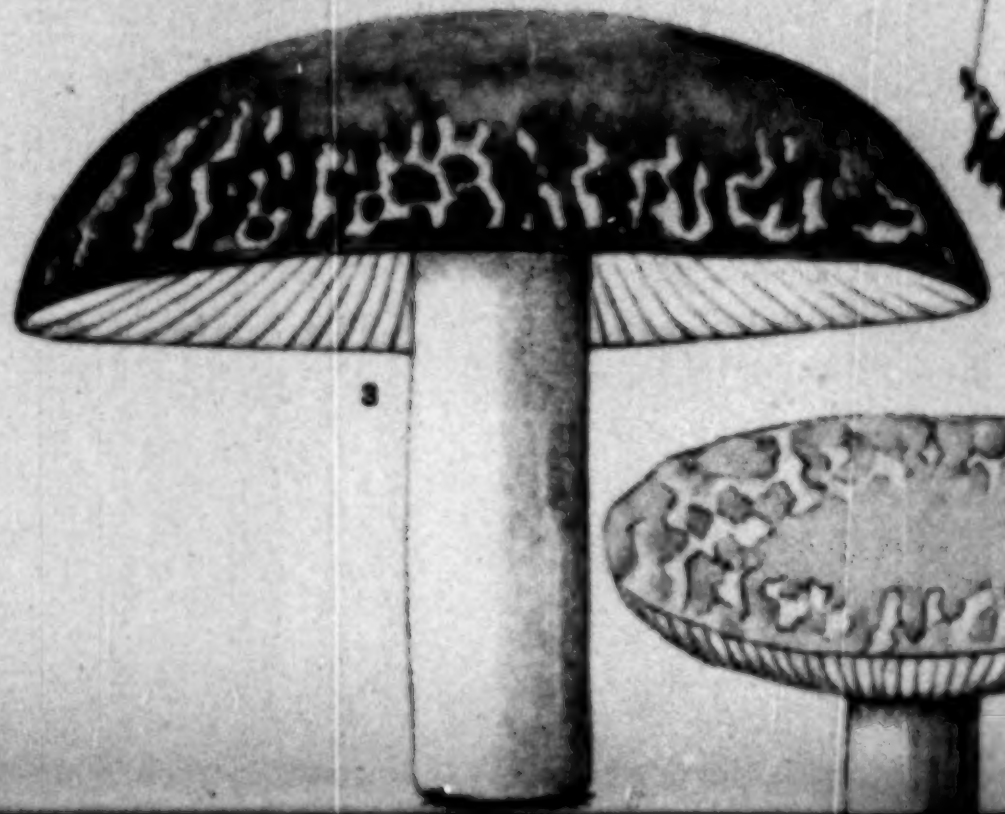
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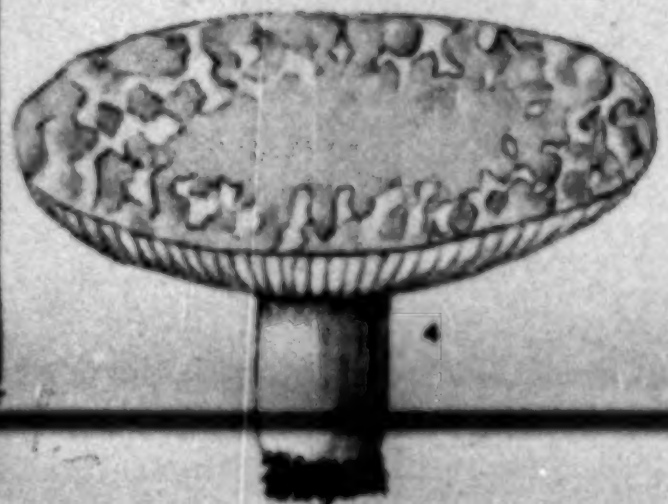
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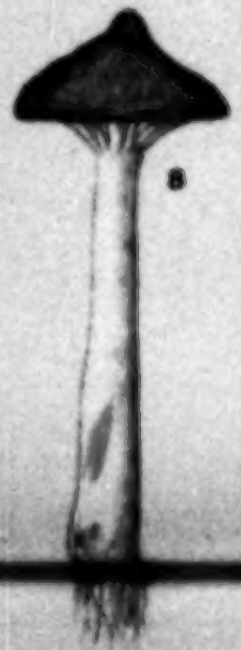
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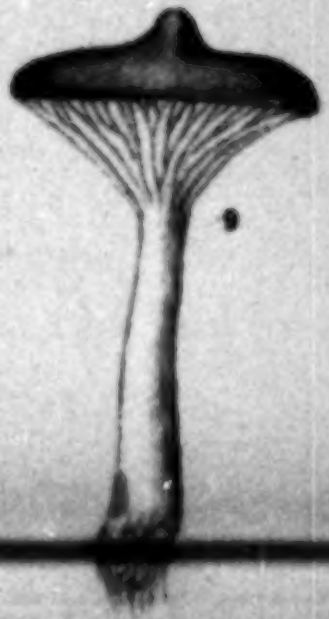
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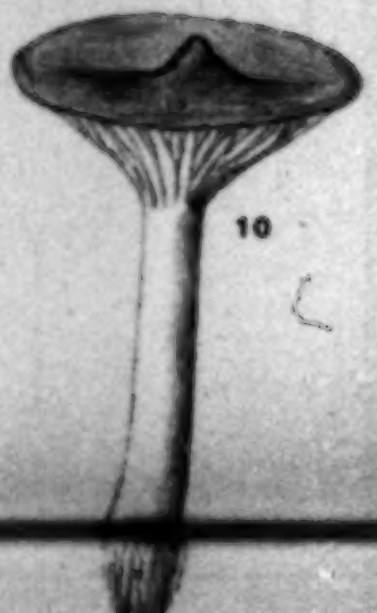
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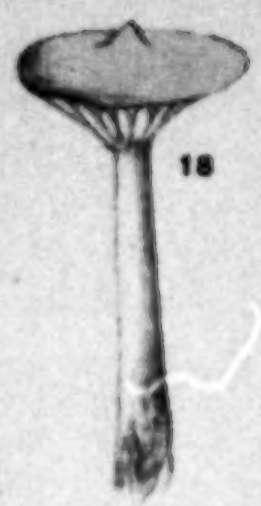

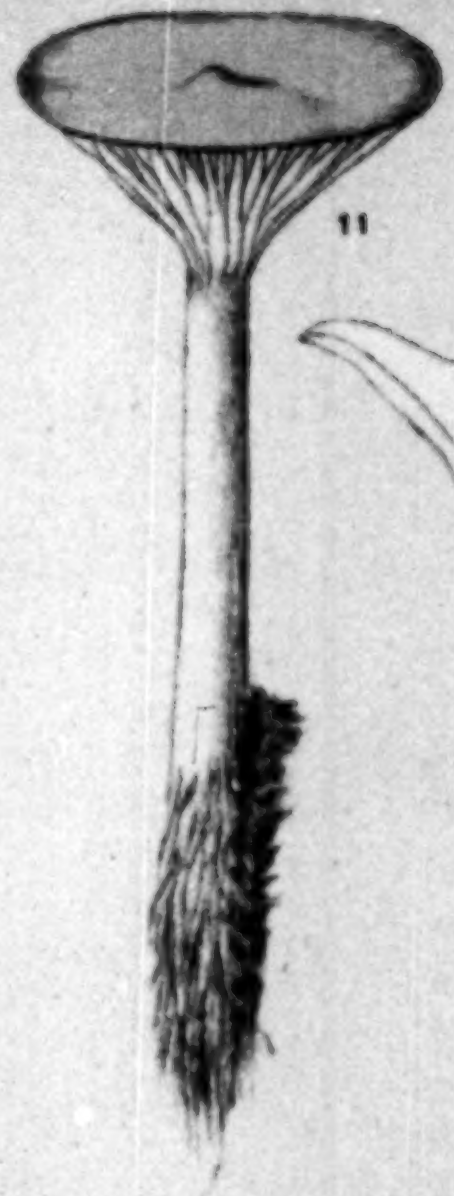

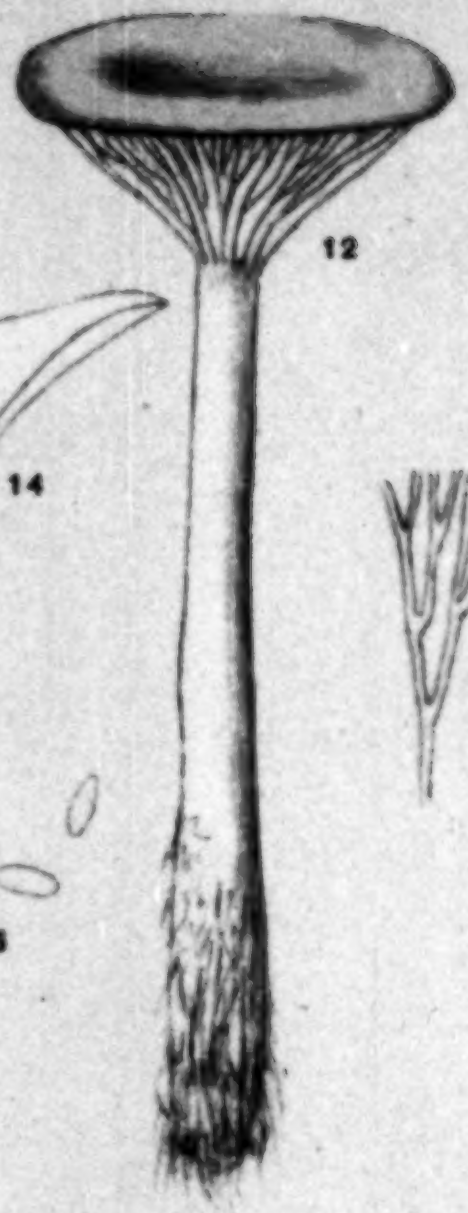

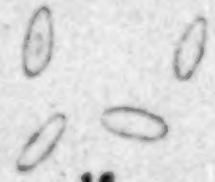

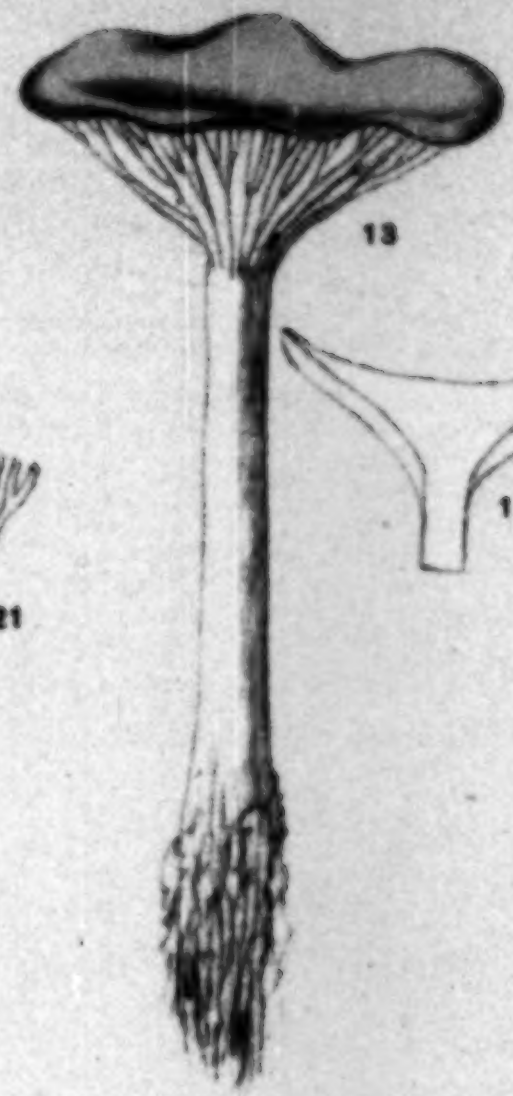

FIG. 1-7 RUSSULA CRUSTOSA PK.
CRUSTED RUSSULA

FIG. 8-21 CANTHARELLUS DICHOTOMUS PK.
FORKED CHANTARELLE

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University of the State of New York 1903

New York State Museum

FREDERICK J. H. MERRILL Director
CHARLES H. PECK State Botanist

Bulletin 75

BOTANY 7

REPORT OF THE STATE BOTANIST 1903

To the Regents of the University of the State of New York

I have the honor of submitting to you the following report of work done in the botanical department of the State Museum during the past year.

Specimens of plants for the herbarium have been collected in the counties of Albany, Columbia, Essex, Hamilton, Oswego, Rensselaer, Saratoga, Schoharie, Warren and Washington. Specimens that were collected in the counties of Chautauqua, Chemung, Essex, Herkimer, Onondago, Ontario, Richmond, Saratoga, Schoharie, Seneca, Steuben, Suffolk, Wayne and Westchester have been received from correspondents.

Specimens collected and contributed represent 193 species. Of these, 46 are new to the herbarium and 13 are considered new or undescribed species. Of the 46 species, 35 are from the collections of the state botanist, 11 from those of correspondents. Of the 13 species, 12 belong to the collections of the botanist, one to those of his correspondents. A list of the names of the species added to the herbarium is marked A.

A list of the names of contributors and of the names of their respective contributions is marked B. The number of those who have contributed specimens is 41. Some of the specimens contributed belong to extralimital species. Some were sent merely for identification, but if for any reason their preservation seemed

desirable and their condition was satisfactory, they have been preserved and credited to the sender as a contribution. The number of those who have sent specimens for identification is 90, the number of identifications made is 623.

Names of species added to our flora, with notes concerning their habitats, localities and time of collection of the specimens, with descriptions of new species are contained in a part of the report marked C.

Remarks and observations on species previously reported, new stations of rare plants, unusual habits and descriptions of new varieties may be found in a part of the report marked D.

Specimens of many species of fleshy, corky and coriaceous fungi are specially subject to the attacks of destructive insects. In order to attain greater security against these attacks a series of such specimens representing about 500 species has been placed in small pasteboard boxes with close fitting covers. These boxes are in different sizes that they may be suitable for the reception of specimens of species of different sizes. The dimensions of the boxes vary in such a way that they present a certain degree of uniformity when arranged in proper order on the shelves of wall cases. They are 3x4, 4x6 or 6x8 inches in width and length and 1¼ or 2½ inches deep. The alphabetic arrangement of the genera represented by their contents has been adopted to facilitate reference to them.

The investigation of our mushroom flora has been continued, but the crop of wild mushrooms has been unusually deficient and the additions to the herbarium correspondingly small. Still, a few species have been tested for their edible qualities and found to be worthy of addition to the list of New York edible species. Colored figures of these have been prepared and plain descriptions of them may be found in a part of the report marked E.

In my last report the general deficiency of the mushroom crop and the almost total absence of the common mushroom, Agaricus campester, were recorded and the peculiar character of the season was assigned as the probable cause. The season of 1903 has been similar to that of 1902 in its abundance

of rain and in its prevailing low temperature. It has also been similar, at least in the eastern part of the State, in its adverse influence on mushroom growth. In some respects its adverse character seems to have been intensified. Possibly the excessive drouth in the early part of the season may to some extent be responsible for this by preventing the development of the mycelium of some species. In 1895 and 1896 the abundance of the crop of the common mushroom and of the smooth mushroom was remarkable. They had then apparently reached their greatest abundance. In the few following years they appeared in moderate but diminishing quantity. In 1901 but few were seen in the vicinity of Albany. In 1902 they were still less in number and in 1903 I did not see a single specimen of the common mushroom in the whole region about Albany. This species at least seems to have reached its lowest point of productiveness. The probability is that there will now be a gradual return to greater crops of this mushroom. It is very evident that much moisture, specially if attended by prevailing low temperature, is not favorable to large crops of mushrooms. Probably the most favorable seasons will be found to be those of moderate rainfall and medium or rather high temperature, the rains being gentle and frequent.

Specimens of about 75 speeies and varieties of edible mushrooms have been placed in trays and arranged in table cases for permanent exhibition. Specimens of species of fungi injurious to wood have also been placed in table cases, and also species of parasitic fungi destructive to cultivated and useful plants. These and samples of wood and bark affected by mycelium of various wood-destroying fungi constitute an economic collection of fungi which should be instructive and of popular interest.

The study of the Crataegus flora of the eastern part of the State has been continued and considerable time devoted to it. Specimens have been collected in the counties of Albany, Saratoga, Warren, Essex, Washington, Rensselaer and Columbia. A few have also been collected in the counties of Hamilton and Schoharie, but only a single visit was made to each of these localities,

and therefore the specimens from them are too incomplete to be satisfactory. These places must be again visited earlier in the season in order to get flowering specimens. Those who have made a special study of these trees and shrubs and have recently published many new species have given specific value to such characters as require a very complete set of specimens to make the identification certain and satisfactory. There are also some characters that are not well shown by the dried specimens and in order to make these available notes must be taken of them at the time the specimens are collected. The number of species recently described is so great that it seems very probable that mere varieties and perhaps mere forms have been in some cases described as species. But error in this direction may have a tendency to stimulate closer observation on the part of others in their efforts to recognize the fine distinctions made and may in the end be productive of better results than error in the other direction would be. According to the present understanding of these plants the number of species of Crataegus added to our flora is 19. They are specially noticed in a part of the report marked F.

A supplementary list of plants of the Susquehanna valley is marked G. It is composed of the names and annotations of species detected since the previous list was written and of species accidentally omitted from that list. It includes about 30 species.

Respectfully submitted

CHARLES H. PECK

Albany, Dec. 2, 1903

A

PLANTS ADDED TO THE HERBARIUM

New to the herbarium

Asarum reflexum *Bick.*
Aster curvescens *Burgess*
Crataegus ascendens *S.*
C. brainerdi *S.*
C. conjuncta *S.*
C. contigua *S.*
C. delucida *S.*
C. dilatata *S.*
C. dissona *S.*
C. egglestoni *S.*
C. exclusa *S.*
C. flabellata (*Spach*) *Rydb.*
C. gravesii *S.*
C. irrasa *S.*
C. intricata *Lange*
C. lobulata *S.*
C. praecoqua *S.*
C. matura *S.*
C. peckii *S.*
C. succulenta *Lk.*
Daphne mezereum *L.*
Entoloma griseum *Pk.*
Geoglossum farlowi *Cke.*
Haplosporella maclurae *E. & B.*
Hebeloma socialis *Pk.*
Hypomyces boletinus *Pk.*
Hydnum balsameum *Pk.*
H. macrescens *Banker*
Inocybe castanea *Pk.*
I. excoriata *Pk.*
I. fallax *Pk.*
I. serotina *Pk.*
I. squamosodisca *Pk*
Isaria brachiata (*Batsch*) *Schum.*
Iva xanthiifolia (*Fres.*) *Nutt.*
Lactarius subvelutinus *Pk.*
Nardia obovata (*Nees*)
Oxalis brittonae *Small*
Perilla frutescens (*L.*) *Britton*
Phacelia dubia (*L.*) *Small*
Phaeopezia retiderma (*Cke.*) *Sacc.*
Podosphaera leucotricha (*E. & E.*) *Salm.*
Sarcoscypha rhenana *Fckl.*
Stereum burtianum *Pk.*
Tricholoma subluteum *Pk.*
Ulmaria rubra *Hill*

Not new to the herbarium

Agaricus arvensis *Schaeff.*
Agrostemma githago *L.*
Agastache scrophulariaefolia (*Willd.*)
Agrostis perennans (*Walt.*) *Tuckm.*
Allium canadense *L.*
A. vineale *L.*
Alsine graminea (*L.*) *Britton*
Althaea rosea *Cav.*
Amelanchier botryapium (*L. f.*) *D C.*
A. rotundifolia (*Mx.*) *Roem.*
Antennaria parlinii *Fern.*
A. plantaginea *R. Br.*
Arcyria punicea *Pers.*
Aster rosc. variifolius *Pk.*
A. undulatus *L.*
Berberis vulgaris *L.*
Bidens cernua *L.*
Boletus americanus *Pk.*
B. chry. albocarneus *Pk.*
B. elbensis *Pk.*
B. luridus *Schaeff.*
B. piperatus *Bull.*
B. rubinellus *Pk.*
Bromus tectorum *L.*
Cantharellus cibarius *Fr.*
C. infundibuliformis (*Scop.*) *Fr.*
C. tubaeformis *Fr.*
Cardamine pennsylvanica *Muhl.*
Collybia acervata *Fr.*
C. familia *Pk.*
C. velutipes *Curt.*

Claudopus nidulans (*Pers.*) *Pk.*
Clavaria inaequalis *Mull.*
C. krombholzii *Fr.*
Conium maculatum *L.*
Coprinus micaceus *Fr.*
Cornus candidissima *Marsh.*
C. stolonifera *Mx.*
Cortinarius amarus *Pk.*
C. canescens *Pk.*
C. cinnabarinus *Fr.*
C. rigidus *Fr.*
C. uliginosus *Berk.*
Craterellus clavatus (*Pers.*) *Fr.*
Crataegus champlainensis *S.*
C. coccinea *L.*
C. crus-galli *L.*
C. holmesiana *Ashe*
C. macracantha *Lodd.*
C. modesta *S.*
C. oxyacantha *L.*
C. pringlei *S.*
C. pruinosa *Wend.*
C. punctata *Jacq.*
Dalibarda repens *L.*
Daucus carota *L.*
Echium vulgare *L.*
Entoloma grayanum *Pk.*
Euonymus obovatus *Nutt.*
Fomes fomentarius (*L.*) *Fr.*
F. igniarius (*L.*) *Fr.*
F. pinicola *Fr.*
Galera lateritia *Fr.*
Galium mollugo *L.*
G. tinctorium *L.*
Gentiana andrewsii *Griseb.*
Gratiola virginiana *L.*
Heliopsis helianthoides (*L.*) *B. S. P.*
Helvella ambigua *Karst.*
Hirneola auricula-judae (*L.*) *Berk.*
Hydnum coralloides *Scop.*
H. grav. subzonatum *Pk.*
Hygrophorus capreolaris *Kalchb.*
H. pudorinus *Fr.*
Hypericum arcyron *L.*
Hypholoma capnoides *Fr.*
H. subaquilum *Bann.*
Hypocrea fungicola *Karst.*
Lactarius affinis *Pk.*
L. deliciosus *Fr.*
L. glyciosmus *Fr.*
Lactarius subd. oculatus *Pk.*
L. vellereus *Fr.*
Lenzites sepiaria *Fr.*
Lepiota amianthina *Scop.*
Lychnis alba *Mill.*
Lycoperdon perlatum *Pers.*
Lycopodium clavatum *L.*
L. obscurum *L.*
Marasmius scorodonius *Fr.*
Matricaria matricarioides (*Less.*) *Porter*
Meibomia bracteosa (*Mx.*) *Kuntze*
Melilotus officinalis (*L.*) *Lam.*
Moneses uniflora (*L.*) *Gray*
Mycena galericulata (*Scop.*) *Fr.*
Myosotis laxa *Lehm.*
Myrica gale *L.*
Osmunda regalis *L.*
Otidea onotica (*Pers.*) *Fckl.*
Pinus echinata *Mill.*
P. strobus *L.*
Pleurotus porrigens *Pers.*
Polyporus cuticularis (*Bull.*) *Fr.*
P. picipes *Fr.*
Polystictus abietinus *Fr.*
P. hirsutus Fr.
P. perennis (*L.*) *Fr.*
Protomyces erythronii *Pk.*
Puccinia suaveolens (*Pers.*) *Rostr.*
Ribes floridum *L'Her.*
R. rubrum *L.*
Rubus canadensis *L.*
R. nigrobaccus *Bail.*
R. occid. pallidus *Bail.*
Russula furcata (*Pers.*) *Fr.*
R. dens. paxilloides *Pk.*
R. flaviceps *Pk.*
R. fragilis (*Pers.*) *Fr.*
R. purpurina *Q. & S.*
Salix discolor *Muhl.*
S. fragilis *L.*
Sanicula gregaria *Bick.*
Scirpus atrocinctus *Fern.*
S. atrovirens *Muhl.*
S. pedicellatus *Fern.*
Septoria rhoina *B. & C.*
Sisymbrium altissimum *L.*
Solidago canadensis *L.*
Spiraea salicifolia *L.*
Stropharia depilata (*Pers.*) *Fr.*

Symphytum officinale *L.*
Taraxacum taraxacum (*L.*) *Karst.*
Thelephora palmata (*Scop.*) *Fr.*
Thymus serpyllum *L.*
Tragopogon pratensis *L.*
Tricholoma sejunctum *Sow.*
T. subacutum *Pk.*
T. vaccinum (*Pers.*) *Fr.*
Ustilago zeae (*Beckm.*) *Ung.*
Uvularia sessilifolia *L.*
Valerianella radiata (*L.*) *Dufour*
Verbena angustifolia *Mx.*
Viola blanda *Willd.*
V. cucullata *Ait.*
V. labradorica *Schrank*
V. rotundifolia *Mx.*
V. selkirkii *Pursh*

B

CONTRIBUTORS AND THEIR CONTRIBUTIONS

Mrs E. G. Britton, New York

Anomodon attenuatus *Hueben.*
A. apiculatus *B. & S.*
Bryum nutans *Schreb.*
Buxbaumia aphylla *L.*
Cephalozia curvifolia *Dumort.*
Collema plicatile *Ach.*
Cylindrothecium seductrix *Sull.*
Dicranum flagellare *Hedw.*
D. viride *Schp.*
Grimmia apocarpa *Hedw.*
Hypnum brevirostre *Ehrh.*
H. chrysophyllum *Brid.*
H. imponens *Hedw.*
H. lindbergii *Limpt.*
H. novae-angliae *S. & L.*
H. proliferum *L.*
H. schreberi *Willd.*
Hypnum triquetrum *L.*
Homalia gracilis *James*
Leptotrichum pallidum *Hampe*
Leucodon brachypus *Brid.*
Mnium aff. ciliare *C. & M.*
M. cuspidatum *Hedw.*
M. medium *B. & S.*
Philonotis fontana *Brid.*
Platygyrium repens *B. & S.*
Polytrichum juniperinum *Willd.*
Porella platyphylla *Lindb.*
Pylaisaea polyantha *B. & S.*
P. velutina *B. & S.*
Sphagnum cymbifolium *Ehrh.*
Trichostomum brev. holtii *Dixon*
Ulota crispa *Brid.*
Weisia viridula *Brid.*

Mrs H. C. Davis, Falmouth Me.

Thalesia uniflora (*L.*) *Britton*
Lysimachia vulgaris *L.*

Mrs M. S. De Coster, Little Falls

Daphne mezereum *L.*

Mrs P. H. Dudley, New York

Carex stricta *Lam.* (Culms and leaves)

Mrs L. L. Goodrich, Syracuse

Phacelia dubia (*L.*) *Small*

Miss M. Hope, Seattle Wash.

Pseudotsuga mucronata *Carr.* (Piece of bark)

Mrs M. A. Knickerbocker, San Francisco Cal.

Arbutus menziesii *Pursh*
Quercus dumosa *Nutt.*
Tumion californicum *Greene*
Umbellularia californica *Nutt.*
Rhamnus californica *Eschs.*

Miss J. A. Moses, Jamestown

Viola rotundifolia *Mx.*

Miss E. S. Thomas, Schoharie

Craterellus clavatus (*Pers.*) *Fr.*

J. C. Arthur, Lafayette Ind.

Phragmidium speciosum *Fr.*
Puccinia amphigena *Diet.*
Ravenelia portoricensis *Arth.*
Uromyces acuminatus *Arth.*
Puccinia eleocharidis *Arth.*

H. J. Banker, California Pa.

Craterellus dubius *Pk.*

W. C. Barbour, Sayre Pa.

Corticium salicinum *Fr.*
Dasyscypha virginea (*Batsch*) *Fckl.*
Fuligo violacea *Pers.*
Irpex paradoxus (*Schrad.*) *Fr.*
Isaria brachiata (*Batsch*) *Schum.*
Xylaria grandis *Pk.*

F. J. Braendle, Washington D.C.

Amanitopsis vaginata (*Bull.*) *Roze*
Clitocybe virens (*Scop.*) *Fr.*
Collybia strictipes *Pk.*
C. tort. setipes *Pk.*
Flammula spumosa *Fr.*
Lachnea hemisphaerica (*Wigg.*) *Gill.*
Pholiota lutea *Pk.*
Thelephora vialis *Schw.*

E. Bartholomew, Rockport Kan.

Tylostoma mammosum (*Mich.*) *Fr.*
T. poculatum *White*
Pluteus longistriatus *Pk.*

S. H. Burnham, Vaughns

Asarum reflexum *Bick.*
Aster curvescens *Burgess*
Oxalis brittonae *Small*
Paspalum muhlenbergii *Nash*
Perilla frutescens (*L.*) *Britton*
Xanthium commune *Britton*

G. D. Cornell, Cooper's Plains

Hydrangea arborescens *L.*
Lilium superbum *L.*

J. Dearness, London Ont.

Diaporthe microstroma *E. & E.*
D. velata *Pers.*
Dichomera prunicola *E. & D.*
Hemitrichia vesparium (*Batsch*)
Lycogala exiguum *Morg.*
Trichia incarnata *Pers.*

W. G. Farlow, Cambridge Mass.

Nardia obovata *Nees*

F. E. Fenno, Nichols

Carex flava *L.*
Salix myrtilloides *L.*
Verbena angustifolia *Mx.*
Woodwardia virginica (*L.*) *Sm.*

A. O. Garratt, Salt Lake City Utah

Puccinia calochorti *Pk.*
Puccinia plumbaria *Pk.*

C. Gramesly, Charleston Ill.

Agaricus abruptus *Pk.*

N. M. Glatfelter, St Louis Mo.

Flammula eccentrica *Pk.*
Galera capillaripes *Pk.*
Hypholoma ornellum *Pk*
Lactarius subvelutinus *Pk*
Pholiota detersibilis *Pk.*
Pholiota autumnalis *Pk.*
Russula luteobasis *Pk.*
R. pusilla *Pk.*
Tricholoma viscosum *Pk.*

L. W. Hahn, Silver Creek

Euonymus obovatus *Nutt.*

C. C. Hanmer, East Hartford Ct.

Geoglossum farlowi *Cke.*

W. Herriot, Galt Ont.

Bromus cil. laeviglumis *Scrib.*
Panicum lanuginosum *Ell.*

R. B. Hough, Lowville

Pinus echinata *Mill.*

F. G. Howland, Saratoga

Collybia velutipes *Curt.*

R. B. Mackintosh, Peabody Mass.

Clitocybe cerussata *Fr.*
Deconica bryophila *Pk.*
Pleurotus petaloides (*Bull.*) *Fr.*
Tricholoma grammopodium (*Bull.*) *Fr.*

C. McIlvaine, Cambridge Md.

Hypomyces viridis (*A. & S.*) *Karst.*
Panaeolus epimyces *Pk.*
Phytophthora phaseoli *Thax.*

W. S. Moffatt, Chicago Ill.

Clitocybe piceina *Pk.*
Pholiota comosa *Fr.*

G. E. Morris, Waltham Mass.

Boletinus grisellus *Pk.*
Boletus parasiticus *Bull.*
Lentinus tigrinus *Fr.*
Otidea onotica (*Pers.*) *Fckl.*

R. S. Phifer, Danville Va.

Boletus morgani *Pk.*
B. caespitosus *Pk.*
Polyporus curtisii *Berk.*

E. B. Sterling, Trenton N. J.

Geaster minimus *Schw.*
G. pectinatus *Pers.*
G. giovanellae *Bres.*
Catastoma subterraneum (*Pk.*) *Morg.*
Agaricus cothurnatus *Pk.*
A. rutilescens *Pk.*
A. solidipes *Pk.*
A. sphaerosporus *Pk.*

R. H. Stevens, Detroit Mich.

Helvella stevensii *Pk.*

F. C. Stewart, Geneva

Haplosporella maclurae *E. & B.*

D. R. Sumstine, Kittanning Pa.

Dictydiaethalium plumbeum (*Schum.*)
Lentinus ursinus *Fr.*
Merulius tremellosus *Schrad.*
Podosphaera oxyacanthae *DC.*
Puccinia cryptotaeniae *Pk.*
Stropharia squam. aurantiaca *Cke.*
Urnula craterium (*Schw.*) *Fr.*

W. E. Warner, Washington D. C.

Amanita radicata *Pk.*
A. musc. formosa (*G. & R.*)
Pluteus cervinus (*Schaeff.*) *Fr.*
Polyporus cuticularis *Fr.*

B. C. Williams, Newark

Inocybe serotina *Pk.*

J. R. Cushier, New York City
Panaeolus solidipes *Pk.*

A. Knechtel, Albany
Picea canadensis (*Mill.*) *B. S. P.* (Trunk section)

L. H. Watson, Chicago Ill.
Clitocybe piceina *Pk.*

C

SPECIES NOT BEFORE REPORTED

Asarum reflexum Bick.

Ravines. Williams Bridge, Westchester co. May. S. H. Burnham.

Aster curvescens Burgess.

Woodlawn cemetery, Westchester co. July. S. H. Burnham.

Crataegus ascendens Sarg.

Clayey soil in pastures and borders of woods. North Greenbush and Rensselaer. May, July and September.

Crataegus brainerdi Sarg.

Rocky places in pastures. Sandlake. May and September.

Crataegus conjuncta Sarg.

Clayey and sandy soil. North Greenbush and in various places north and northeast of Albany. May, September and October.

Crataegus contigua Sarg.

Shaly soil. Lansingburg. May and September.

Crataegus delucida Sarg.

Clayey hillsides north of Albany. May and September.

Crataegus dilatata Sarg.

Clayey soil, roadsides and pastures. Thompsons Lake, Albany co. and Gansevoort, Saratoga co. June, July and September.

Crataegus dissona Sarg.

Clayey soil. Near Albany, Rensselaer, Lansingburg, Copake and Thompsons Lake. May, July and September.

Crataegus egglestoni Sarg.

Rocky places. Crown Point. May, July and September.

Crataegus exclusa Sarg.

Clayey soil. Crown Point. May, July and September.

Crataegus flabellata (Spach) Rydb.

Rocky places near the lake shore. Crown Point. May and September. This is a beautiful species well marked by its deeply and sharply lobed shining leaves, its 20 stamens with pink anthers and its globose fruit.

Crataegus gravesii Sarg.

Clayey soil. Albany, North Greenbush and Westport. May, June, September and October.

Crataegus irrasa Sarg.

Clayey soil. North Greenbush. May, June and September.

Crataegus intricata Lange

Hillsides near Albany and north of Lansingburg. May, June and September.

Crataegus lobulata Sarg.

Clayey soil. Crown Point. May and September.

Crataegus macracantha Lodd.

Clayey and sandy soil. North Greenbush, Thompsons Lake, Fort Ann and North Elba. May, June and September. This was formerly reported as a variety of Crataegus coccinea, but is now considered a distinct species. The name indicates that it has long spines, but they are not always conspicuously long. Its stamens vary in number from 7 to 10 and its anthers are whitish or pale yellow.

Crataegus matura Sarg.

Rocky or bushy pastures. Gansevoort, Saratoga co. and Lake Pleasant, Hamilton co. June, August and September.

Crataegus peckii Sarg.

Shaly soil. North of Lansingburg. May and October.

Crataegus praecoqua Sarg.

Clayey soil. Crown Point. May and September. First discovered here by W. W. Eggleston.

Crataegus succulenta Link

Clayey soil. Albany, Albia, Rensselaer co. and Central Bridge, Schoharie co. May, July and September.

In view of the growing interest in the study of our species of Crataegus it has been thought best to give descriptions of such

of our species as are not described in any of our manuals. These descriptions and remarks on the genus will be found in another part of the report.

Daphne mezereum L.

Gravesville, Herkimer co. Mrs M. S. DeCoster. The spurge laurel or mezereon is an introduced shrub. It is sometimes cultivated but escapes from cultivation and grows wild.

Entoloma griseum n. sp.

Pileus fleshy, firm, broadly campanulate or convex, obtuse or slightly umbonate, glabrous, often irregular, hygrophanous, grayish brown when moist, paler when dry, flesh whitish, odor and taste farinaceous; lamellae adnexed, emarginate, with a decurrent tooth, about 2 lines broad, pale pink; stem equal or slightly tapering upward, silky fibrillose, pruinose or mealy at the top, stuffed or hollow, grayish white; spores angular, nearly as broad as long, .0003 of an inch long.

Pileus 1-3 inches broad; stem 1-2 inches long, 3-5 lines thick. Under spruce and balsam fir trees. Lake Pleasant. August.

It is closely related to E. g r a y a n u m from which it may be separated by its darker color, more narrow gills and different place of growth.

Euonymus obovatus Nutt.

Woods. Silver creek, Chautauqua co. L. W. Hahn.

This decumbent or trailing shrub was reported by Dr Torrey to belong to our flora, but he considered it a mere variety of E u o n y m u s a m e r i c a n u s. It is now regarded as a distinct species differing from the strawberry bush in its smaller flowers, obtuse and more finely crenulate leaves, earlier time of flowering and decumbent or trailing mode of growth.

Geoglossum farlowi Cke.

Fishers island, Suffolk co. September. C. C. Hanmer. This fungus is much like G . h i r s u t u m in external appearance, but its spores have but three septa.

Haplosporella maclurae E. & B.

Dead stems of wistaria. Geneva. April. F. C. Stewart.

Hebeloma socialis n. sp.

Pileus fleshy but thin, convex, becoming plane or nearly so, glabrous, slightly viscid when moist, dingy yellowish white, flesh concolorous, taste nauseous; lamellae thin, close, slightly rounded behind, adnexed, at first whitish, then yellowish, finally brownish ferruginous; stem short, fibrous, floccose fibrillose, hollow with a small cavity, white; spores brownish ferruginous, elliptic, .00025-.0003 of an inch long, .00016-.0002 broad.

Pileus 8-15 lines broad; stem 12-18 lines long, 1.5-3 lines thick. Closely gregarious or subcespitose. Among short grass in pastures and golf ground. Menands. October. Distinguished from our other white or whitish species by its peculiar habitat and mode of growth and by its small spores.

Hypomyces boletinus n. sp.

Perithecia minute, conic or subglobose, closely nestling in a pallid or whitish subiculum, pale red or orange; asci slender, linear, .004-.005 of an inch long, scarcely .0003 broad; spores subfusiform, continuous, acuminate or apiculate at one end, .0008-.001 of an inch long, .00025 broad.

On some unrecognized decaying boletus, associated with Sepedonium chrysospermum. It differs from H. polyporinus, to which it is most closely related, in its more highly colored perithecia and longer spores, and from H. boleticola in the color of the subiculum.

Hydnum balsameum n. sp.

Resupinate with a very thin whitish or pallid subiculum; aculei mere conic brown points closely scattered but not crowded, giving to the surface a brown color.

Decorticated wood of balsam fir. North Elba. September. It sometimes grows on the bark also.

Hydnum macrescens Banker in lit.

Resupinate, effused, the thin subiculum less than 1 mm thick, ochraceous, subfarinaceous, specially in the thinner portions and on the woody substratum, rimose, the margin indeterminate; mycelium white, arachnoid, spreading in places beyond the subic-

ulum; teeth scattered, minute, .1-.25 mm long, .05-.1 mm broad, obtuse, often forked, colored like the subiculum but paler or white at the subciliate tips. Growing chiefly on the hymenial surface of Stereum frustulosum but often spreading over the substratum of decayed wood. Mt McGregor, Saratoga co. July.

The growth is most vigorous on the surface of the Stereum, where the subiculum becomes thickest and the teeth most numerous. On the woody substratum the growth is poor, the subiculum is thin and often the mycelium spreads naked over the surface of the wood. This has suggested the specific name. The thinning out of the subiculum indicates that the fungus finds its proper nourishment in the tissues of the Stereum and it is doubtful if it will be found dissociated from that plant. It appears to be related to H. sulphurellum Pk. but differs from it in color, in the indeterminate margin and in the ciliate teeth.

Inocybe castanea n. sp.

PLATE O, FIG. 1-8

Pileus conic or convex, umbonate, rimose fibrillose, the margin incurved, dark chestnut brown; lamellae thin, narrow, close, adnate, whitish or pallid when young, ferruginous brown when mature; stem equal, hollow, glabrous, slightly pruinose or mealy at the top; paler than the pileus; often whitened at the base by mycelioid tomentum; spores angular, nearly or quite as broad as long, .00025-.0003 of an inch long and broad; cystidia subfusiform, .002-.0024 of an inch long.

Pileus 5-8 lines broad; stem 10-18 lines long, about 1 line thick. Mossy ground under spruce and balsam fir trees. Lake Pleasant. August.

This species is very closely related to I. umboninota from which it may be separated by its smaller size, the chestnut tint of the cap, its hollow stem and smaller merely angular spores. Cystidia are more abundant. The species belongs to section Rimosi.

Inocybe excoriata n. sp.

PLATE O, FIG. 14-19

Pileus fleshy, broadly conic, soon broadly convex, umbonate, fibrillose or fibrillose squamulose, somewhat silky or tomentose

on the margin, grayish brown or pale vandyke brown, the cuticular surface often cracking and separating in places but remaining on the disk and sometimes on the margin, flesh white; lamellae narrow, close, emarginate, adnexed, decurrent with a tooth, crenulate on the edge, white becoming brownish gray; stem equal, solid, silky fibrillose, white or whitish without and within; spores yellowish brown (raw umber), elliptic, even, .0003-.0004 of an inch long, .0002-.00024 broad; cystidia flask shape, .002-.0024 of an inch long.

Pileus 1-2 inches broad; stem 1-2 inches long, 2-3 lines thick. Among fallen leaves in woods. Lake Pleasant. August.

The surface of the pileus cracks longitudinally and therefore the species belongs to the section Rimosi. The peeling and disappearance of parts of the cuticle suggest the specific name. A slight whitish webby veil is present in the young plant.

Inocybe fallax n. sp.

PLATE O, FIG. 20-24

Pileus thin, campanulate or convex, umbonate, obscurely fibrillose, sometimes minutely and obscurely squamulose, whitish or buff white, somewhat shining, the margin decurved or incurved, often splitting; lamellae thin, close, rounded behind, slightly adnexed, pallid when young, becoming rusty brownish when old; stem long, equal, hollow, flexuous, minutely pruinose, mealy, whitish; spores angular, slightly nodulose, .0003-.0004 of an inch long, .00024-.0003 broad; cystidia .0016-.002 of an inch long, .0006-.0007 broad, oblong elliptic.

Pileus 1-2 inches broad; stem 2-3 inches long, 2-4 lines thick. Among fallen leaves in woods. Lake Pleasant. August.

This species might easily be taken for a large form of I. geophylla, but an examination of its spores shows it to be distinct. Its cystidia are short and broad.

Inocybe serotina n. sp.

Pileus fleshy, firm, varying from campanulate to nearly plane, fibrillose toward the margin, white, sometimes tinged with yellow or brownish yellow, flesh white; lamellae close, rounded behind, nearly free, subventricose in fully expanded specimens, whitish

becoming brownish cinnamon; stem nearly equal, bulbous or narrowed at the base, long or short, solid, fibrous, white; spores oblong, even, .0005-.0006 of an inch long, .00024-.0003 broad.

Pileus 1-2.5 inches broad; stem 1-2 inches long, 3-6 lines thick. Sandy shores of Sodus bay and Lake Ontario. October. E. B. Burbank. Communicated by B. C. Williams.

Related to I. sambucina from which it differs in the fibrillose margin of the cap, in the darker color of the mature lamellae, in the larger spores and in its habitat. From Hebeloma colvini, which also grows in sandy soil, it differs in its whitish color, longer spores and solid stem. Its mycelium binds together a mass of sand which forms a somewhat bulbous base to the stem. Mr Burbank says that it occurred in great abundance in October and that it is edible.

Inocybe squamosodisca n. sp.

PLATE O, FIG. 10-13

Pileus fleshy, firm, convex, dry, fibrillose on the margin, rimose squamose in the center, ochraceous buff, flesh whitish or yellowish white; lamellae rather broad, moderately close, adnate, pale ochraceous, becoming darker with age; stem short, firm, equal, solid, fibrillose, colored like the pileus; spores elliptic, even, .0003-.0004 of an inch long, .0002-.00024 broad.

Pileus 1-2 inches broad; stem about 1 inch long, 2-3 lines thick. Gregarious. Under pine trees. Shore of Sacandaga lake. August.

The scales of the pileus are flat and spotlike and are formed by the cracking of the cuticle.

Isaria brachiata (Batsch) Schum.

On decaying Tremellodon gelatinosum. Van Etten. October. W. C. Barbour.

Iva xanthiifolia (Fres.) Nutt.

Waste places in the northern part of Albany. August. Introduced from the west but growing freely here.

Lactarius subvelutinus n. sp.

Pileus fleshy, firm, convex or nearly plane, subumbilicate, dry, minutely velvety or pruinose velvety, sometimes rugose, golden tawny, flesh white, milk white, taste mild; lamellae narrow,

close, adnate or slightly decurrent, yellowish or cream color, becoming darker with age; stem short, equal, solid, colored like or a little paler than the pileus; spores white, globose, nearly smooth, .0003 of an inch broad.

Pileus 1-2 inches broad; stem .5-1 inch long, 2-4 lines thick. Woods and open places. Meadowdale and Cemetery, Albany co. August.

Nardia obovata Nees

Rocks. Rainbow falls near Lower Ausable lake, Essex co. September. W. G. Farlow.

Oxalis brittonae Small

Van Cortland park, Westchester co. June. S. H. Burnham.

Perilla frutescens (L.) Britton

Sleepy Hollow near Tarrytown. October. S. H. Burnham.
This is an introduced species.

Phacelia dubia (L.) Small

Shady places on limestone rocks near Jamesville, Onondaga co. October. Mrs L. L. Goodrich.

In our botanies, Pennsylvania is the northeastern limit assigned to the range of this plant. Its discovery near Jamesville by Mrs Goodrich extends its range northward and adds a beautiful little wild flower to our flora. Its usual flowering time is in spring, but these specimens were found in flower the last week in October. The plants grew in patches several feet in diameter. The species is described in Gray's *Manual* under the name Phacelia parviflora Pursh.

Phaeopezia retiderma (Cke.) Sacc.

Ground in shaded places. Sandlake, Rensselaer co.

Podosphaera leucotricha (E. & E.) Salmon

Parasitic on living twigs of appletrees. Clyde, Wayne co. W. L. Devereaux.

This species of mildew is peculiar in its perithecia having two sets of appendages, one apical, the other basal. It is specially injurious to the young branches of trees in the nursery, but it rarely attacks the twigs of old trees, though suckers from the base or roots are said to be more liable to attack.

Puccinia simillima Arthur

Leaves and sheaths of Phragmites phragmites. Near Savannah, Wayne co. September.

Paspalum muhlenbergii Nash

Bedford Park, Westchester co. September. S. H. Burnham.

Paspalum prostratum Nash

Sandy soil. Manor, Suffolk co. August.

Russula densifolia Secr.

Among decaying leaves in woods. Lake Pleasant. August. This species is closely related to R. adusta from which it may be separated by the slight reddening of the flesh where wounded. Our specimens are a peculiar form in which many of the lamellae are forked at the base. They also separate at the inner extremity from the stem and pileus and curl outward revealing the hymenophore beneath. All the specimens found exhibited this character. It indicates a feeble attachment of the hymenium to the hymenophore and is suggestive of a relationship to the genus Paxillus. The white spores, however, show that it is not referable to that genus. It may be called variety paxilloides.

Russula furcata (Pers.) Fr.

Ground in woods. Near Albany. July. An edible species.

Sarcoscypha rhenana *Fckl.*

Capular, stipitate or subsessile, single or cespitose, often irregular, incurved on the margin when young, externally pruinose tomentose, pale yellow; hymenium pale yellow becoming orange tinted with age or in drying, sometimes slightly pruinose; stem short or almost none, when well developed whitened by a short downy tomentum; asci cylindric; spores elliptic, verrucose, .0008-.0009 of an inch long, .0004-.0005 broad, commonly containing one or two shining nuclei.

Cups 4-8 lines broad; stem 2-6 lines long, 2-4 thick. Decaying leaves and other vegetable matter in woods. Lake Pleasant. August. Its relationship is with S. imperialis from which it differs in the character of its spores and in its more highly colored hymenium.

Stereum burtianum n. sp.

PLATE 0, FIG. 30-34

Pileus thin, submembranaceous, coriaceous, fibrous, subinfundibuliform, sometimes dimidiate, slightly uneven with radiating fibrous ridges, pallid with a slight cervine or rufescent tint, somewhat shining, the thin margin erect, spreading or decurved, slightly wavy or uneven on the edge and often incised or laciniate; hymenium even or slightly radiately uneven, decurrent, from pale buff to ochraceous buff; stem short, tough, solid, minutely tomentose or pruinose tomentose, subcinereous; spores minute, hyaline, even, globose or subglobose, .00012-.00016 of an inch broad.

Pileus 4-8 lines broad; stem 2-3 lines long, about half a line thick. Bare ground in bushy places. Shokan, Ulster co. September.

Sometimes the pilei of two or more plants growing close together are confluent. When well developed the pileus has a central stem, but sometimes one third or one half is wanting and then the stem is lateral though the pileus is usually erect. In such cases the pileus often appears as if perforate and the upper part of the stem as if hollow. This very distinct species is dedicated to Prof. E. A. Burt who has made a special study of the group of fungi to which it belongs and to whom I am under obligations for aid in the identification of some of the species.

Tricholoma subluteum n. sp.

PLATE 0, FIG. 26-29

Pileus broadly campanulate becoming convex, umbonate, obscurely fibrillose, yellow, flesh white; lamellae close, emarginate, adnexed, white; stem equal or slightly tapering upward, solid, fibrillose, yellow, whitish at the pointed base, white within; spores globose, .0002-.00024 of an inch broad.

Pileus 2-4 inches broad; stem 3-4 inches long, 4-8 lines thick. Under coniferous trees. Lake Pleasant. August.

This is a beautiful but apparently a very rare species. It belongs to the second group of section Sericella. It is related to T. chrysenterum and T. chrysenteroides, but may be distinguished from them by its white flesh and lamellae.

Ulmaria rubra Hill.

Balfour place near Aiden Lair, Essex co. July.

The queen of the prairie has been introduced into our State from the West and is found in dooryards and flower gardens where it is cultivated for ornament. It sometimes escapes from cultivation or persists about the sites of old destroyed or abandoned dwellings. It is described in Gray's *Manual* under the name Spiraea lobata.

D

REMARKS AND OBSERVATIONS

Agastache scrophulariaefolia (Willd.) Kuntze

Roadside. Wells, Hamilton co. August. A showy form having purplish bracts and calyx lobes. It is sparingly pubescent and in this respect it approaches A. nepetoides, but it has the thicker spikes and more pointed calyx lobes of A. scrophulariaefolia.

Amanita muscaria formosa (G. & R.) Fr.

Several instances have been reported to me in which this variety of the fly amanita, a poisonous species, has been eaten without harm. In all these instances except one, the mushroom was eaten by those who were at the time ignorant or unsuspicious of its true relationship. In September, Mr A. P. Hitchcock of New Lebanon reported to me a case in which a sheep ventured to try the edible qualities of this mushroom. He says:

While I was gathering a few specimens of boletus in the pastures one evening last week, my cosset buck sheep, which follows me about like a dog, watched my proceedings with close attention for a time. Then, having assured himself of what I was doing he walked to a small group of the fly amanita, which grows luxuriantly in places in my fields, and proceeded to gobble down about a dozen fair sized specimens, eating the caps as greedily as he eats lump sugar from my hand. This was at least three days ago and perhaps more. He is still with us and in no way worse for his indulgence. Does this mean that I have mistaken some other sort for the fly amanita or that what is food for a buck sheep may be poison for a man? The amanita in question had the orange yellow color and the bulbous stem of A. muscaria.

In this as in all other cases of harmless eating of the fly amanita that have been reported to me the variety formosa is indicated

The caps were either wholly or partly yellow. This is the common form in our State. It has the upper surface of the cap either wholly pale yellow or the center only tinged with red or orange, the margin remaining yellow. The form having the whole upper surface of the cap uniformly bright red or orange red is very rare with us. Yet this is the form commonly figured by European mycologists as Amanita muscaria. The form having the pale yellow cap was described by Gonnermann and Rabenhorst as a distinct species but Fries reduced it to a variety. The instances mentioned above are strong presumptive evidence of its harmless character and may be taken as another point of difference between this plant and the poisonous fly amanita. They strengthen the claims of those who have regarded the plant with the yellow cap as a distinct species. Still these two mushrooms are so closely allied in size, shape and structure that it does not seem prudent to regard them as distinct species and the yellowish capped one as edible, till full trial and investigation has established the fact beyond question.

Aster roscidus variifolius n. var.

Lower stem leaves ovate or oblong ovate, cordate, acuminate, serrate, petiolate, 2-5 inches long, upper stem leaves much smaller, oblong, entire, sessile or with a very short, widely winged petiole, scarcely more than 1 inch long.

Woods along the shore of Lake Ontario north of Mexico. September.

The whole plant is glandular. The three or four upper leaves are abruptly reduced in size.

Aster undulatus L.

A small form, 1.5-2 feet tall, with leaves ovate or subrotund, the lower petiolate, cordate and serrate with broad teeth, occurs near Minerva. It is related to A. undulatus abruptifolius, but is a much smaller plant.

Antennaria neglecta Greene

A dwarf form having the heads densely capitate, the stems of the pistillate plant only 2-4 inches long and of the staminate plant 2 inches or less, occurs at Minerva. It is in flower the first week

in May. In appearance it resembles the western A. campestris Rydb.

Boletus nebulosus Pk.

In State Museum report 51, page 292 a description of this species was published, but it was derived from mature specimens, no examples of the young plant having at that time been seen. Young specimens were found near Lake Pleasant in August. The pileus in them is hemispheric, soon becoming convex and is dark gray becoming brown with age. The tubes are at first closed and pallid or brownish. The stem is sometimes pointed at the base and varied above with pale streaks.

Cantharellus cibarius longipes n. var.

Pileus irregular, lobed or wavy on the margin, often centrally depressed and rimose squamose; lamellae very narrow, crowded, strongly decurrent, frequently anastomosing; stem long, its length equal to or exceeding the diameter of the pileus. In groves of spruce and balsam fir. North Elba. September.

Cortinarius amarus Pk.

A form of this species was found having the stem 2-3 inches long. It grows under spruce and balsam firtrees in North Elba, and is easily recognized by its small, irregular, yellow, viscid pileus and its very bitter flavor.

Dalibarda repens L.

Fine specimens of this pretty little plant were found by the roadside between Minerva and Aiden Lair. These have several short peduncles bearing mature seeds and one or two long ones now, July 24, bearing flowers. The early flowers were evidently clistogamic and very fruitful.

Eriophorum alpinum L.

Along the roadside 2 miles south of Aiden Lair. This little alpine cotton grass is rare in our State and it is interesting to find it maintaining itself along the side of a much used public highway.

Hydnum graveolens subzonatum n. var.

Pileus thin, nearly plane, slightly umbilicate, fibrously radiate striate, zonate with narrow, slightly darker zones, fuscous or grayish brown; aculei whitish.

North Elba and Lake Pleasant. August and September.

This northern variety agrees with the typical form in its mode of growth and in its odor, but differs from it in having the pileus more or less zonate and the spines of the hymenium whiter.

Mnium affine ciliare C. M.

Catskill mountains. Mrs E. G. Britton. A fine variety readily known by the long ciliae or hairs that adorn the margin of the leaf.

Otidea onotica (Pers.) Fckl.

Gregarious or cespitose, growing in damp shaded places on decaying wood and bark. North Elba. September. The base is sometimes whitened by mycelioid filaments. The receptacle is rather tough, but the more tender hymenium is sometimes eaten by insects or their larvae.

Pilosace eximia Pk.

This rare little species is peculiar in having reddish spores. They are .00025 of an inch long, .00016 broad. The color of the spores appears to vary in the different species of this genus. In one they are described as black, in another as purplish brown. In structure the genus agrees with Pluteus of the pink spored series. At present it contains six species, two of which occur in Europe, two in the West Indies, one in Africa and one in the United States.

Puccinia suaveolens (Pers.) Rostr.

This parasitic fungus may be classed among the useful species. It attacks the noxious Canada thistle and assists in keeping it in check by preventing it from producing seeds. But it also attacks another plant, Centaurea cyanus, blue bottle or bachelor's button, which is often cultivated for ornament. In this case also it prevents the development of the flowers and seeds and it may therefore be classed as an injurious fungus, since the flower is the special part for which the plant is cultivated. This plant escaped from cultivation at Menands and was growing like a weed in waste places. On these wild plants the fungus appeared in its uredo stage in May. Later in the season this was followed by the appearance of the teleutospores, the final stage, on the

same plants. The fungus on this host plant is designated form cyani.

Senecio vulgaris L.

The common groundsel is sometimes a troublesome weed in gardens. It begins to flower early in the spring and in wet seasons successive crops spring up and continue the production of seed till cold weather stops their growth. In poor soil it will flower when but two or three inches high, in rich soil it may grow 12 inches high and bear many branches. It grows rapidly and requires but a few days in which to develop from seed to maturity. The soil sometimes becomes so filled with its seeds that as fast as one crop of the plants is destroyed another takes its place.

Sisymbrium altissimum L.

The tall sisymbrium is an introduced plant which has proved to be quite troublesome as a weed in some of the northwestern states. The past summer it appeared in the vicinity of Albany. It was probably brought here either from the north or the west where it has become firmly established. By destroying such troublesome weeds when they first appear much future labor and trouble may be saved.

Solidago canadensis glabrata Porter

Generally the early goldenrod, Solidago juncea, is the first species to blossom in our latitude. It begins to flower in July, The past season, which is notable for its peculiar influence on some plants, seems to have hastened the time of flowering of some species. On July 24, S. juncea, S. canadensis glabrata, S. arguta and S. rugosa were all found growing near each other at North Creek and all were nicely in flower. The glabrate Canada goldenrod is a northern variety and perhaps in its effort to meet the requirements of the short northern seasons it has acquired the habit of blooming early.

Viola cucullata Ait.

In the cold bogs and wet places of the Adirondack region where this blue violet delights to grow, it is not unusual to find it with flowering scapes 6-9 inches long. The flowers much surpass the leaves, often standing twice as high. Such specimens were col-

lected in North Elba. Near Meadowdale a variety occurs in which the petals are variegated with blue and white. This variety has been observed there for several years and appears to be constant in its characters. I have also received specimens of it from other places and it seems strange that it has not been designated by name by some of those botanists who have made a special study of the violets.

Viola rotundifolia Mx.

Fine specimens of the round leaved yellow violet showing the branched peduncles of the clistogamic flowers were found by the roadside 2 miles south of Aiden Lair in July.

Viola selkirkii Pursh.

This pretty, but with us rare, little blue violet has disappeared from its former station in a pine grove near West Albany. It was found last spring in a grove of arbor vitae trees near Minerva, Essex co.

Xylaria grandis Pk.

Van Etten, Chemung co. W. C. Barbour. The specimens on which this species was founded were sent me by G. W. Clinton in 1872. No other specimens of the species had been seen by me till these came from Mr Barbour. They are smaller than the typical form and two of the three specimens sent have the clubs merely mucronate rather than acuminate. The radicating base is wanting in all the specimens, but it appears to have been broken off in collecting. The spores are of the same character as those of the type specimens and I have no doubt of the specific identity of the two fungi. It must be a rare species to escape a second discovery for 30 years.

E

EDIBLE FUNGI

Collybia acervata Fr.

TUFTED COLLYBIA

PLATE 84, FIG. 8-13

Pileus slightly fleshy, convex becoming expanded or nearly plane, glabrous, hygrophanous, pale tan color or incarnate red and sometimes obscurely striatulate on the margin when moist, whitish after the escape of the moisture; lamellae narrow, thin,

close, rounded behind, slightly adnexed or free, whitish; stem equal, hollow, glabrous, usually white tomentose at the base, reddish brown or purplish brown; spores white, elliptic, .00024-.0003 of an inch long, .00016 broad.

The tufted collybia is an inhabitant of the woods of our hilly and mountainous districts. It grows in dense tufts on decaying prostrate trunks of trees and among decaying leaves or on bits of rotten wood half buried by fallen leaves. The caps are rather thin and convex when young, but they expand with age and become broadly convex or nearly plane. When young and moist they are of a pale tan color or brownish red sometimes with a pinkish tint but as the moisture escapes they fade to a whitish color. In the European plant they are said to be umbonate but in the American plant the umbo is rarely present. The gills are quite narrow and close. They are rounded at the inner extremity and either slightly attached to the stem or quite free from it. They are whitish or slightly tinged with pink. The stem is rather slender, rigid but brittle, hollow and smooth except at the base where it is usually clothed with a white tomentum. The color is reddish brown or purplish brown but in the young plant it is often whitish at the top.

The cap is commonly 1-2 inches broad; the stem 2-3 inches long, 1.5-2.5 lines thick. The plants usually grow in clusters and occur during August and September. Though the individual plants are small they grow in such abundance that it is not difficult to obtain a sufficient supply for cooking. They are slightly tough but of good flavor and harmless.

Collybia familia Pk.

FAMILY COLLYBIA

PLATE 84, FIG. 1-7

Pileus thin, fragile, hemispheric or convex, glabrous, hygrophanous, while moist sometimes slightly striatulate on the margin, whitish, grayish or pale smoky brown, sometimes brownish or more highly colored in the center; lamellae thin, narrow, close, rounded at the inner extremity, nearly free, white; stem slender, glabrous, hollow, white or whitish, commonly with

a white villosity at the base; spores globose, .00016-.0002 of an inch in diameter.

The family collybia is similar to the tufted collybia in its mode of growth. It grows in similar localities but is limited in its habitat to decaying wood of coniferous trees. It is smaller and less frequent in occurrence but the tufts or clusters are generally composed of many more individual mushrooms. The caps are thin and fragile but are usually free from insect attack. They are whitish, grayish or brownish sometimes tinged with yellow but they have none of the reddish hues of the tufted collybia. In drying they are apt to become darker than when fresh. The gills are thin, narrow, crowded, white and free from the stem or but slightly attached to it. The stem is smooth, hollow and white or whitish, but like the pileus it becomes darker in drying. Sometimes it appears to be pruinosely pubescent in the fresh plant when viewed with a lens. A wholly white variety very rarely occurs.

The cap is 6-12 lines broad; the stem 2-4 inches long, 1-1.5 lines thick. The time of its appearance is during July and August. Its edible qualities are similar to those of the tufted collybia from which it is easily separated by its smaller size and different color.

Russula mariae Pk.

MARY'S RUSSULA

PLATE 85, FIG. 1-8

Pileus at first nearly hemispheric, soon broadly convex, nearly plane or centrally depressed, pruinose and minutely pulverulent, dark crimson or purplish, sometimes darker in the center than on the margin, rarely striate on the margin when old, flesh white, pinkish under the cuticle, taste mild; lamellae moderately close, adnate, white when young, pale yellow when old; stem equal, solid or slightly spongy in the center, colored like or a little paler than the pileus, usually white at the top and bottom, rarely entirely white; spores pale yellow, globose, .0003 of an inch broad.

This russula is a beautiful and easily recognizable species, though somewhat variable in its colors. The cap is at first

nearly hemispheric, but it soon becomes convex and continues to expand till it is nearly plane or centrally depressed. The margin is even when young and generally remains so in maturity, but sometimes it becomes radiately striate. The surface appears to the naked eye to be pruinose or covered with a bloom, but under a lens it is seen to be dusted with minute particles which, under the action of water, are separable and give reddish stains to any white surface against which the moistened cap may be rubbed. This pruinosity is one of the best distinguishing features of the species. A little boy once went with his mother to look for mushrooms. They came on a group of Mary's russula and the little boy, noticing the bloom on the caps and recognizing in it a resemblance to the bloom of plums, cried out in childish glee "plummies, plummies." He was evidently a close and thoughtful observer and could distinguish at sight this russula from all others. The flesh of the cap is white, but has a pinkish tint immediately beneath the cuticle which is separable on the margin but adnate in the center of the cap. The taste is mild, but occasionally a specimen may be found in which it is slightly and tardily acrid. The color varies from deep crimson to purple. The center is sometimes more highly colored than the margin and in the purple specimens the margin in old plants is apt to fade to a whitish color and to become striate. The gills are white when young but with advancing age they become yellowish. They are nearly all of full length and are therefore wider apart at the margin of the cap than at the stem. A few are forked at the base and the interspaces are veiny. The stem is generally cylindric but occasionally tapering downward or pointed at the base. It appears to the naked eye to be smooth but under a lens it is slightly pulverulent. It is solid or slightly spongy and white within and colored like or a little paler than the cap externally except at the ends where it is white. Forms occasionally occur in which the stem is entirely white.

The cap is 1-3 inches broad; the stem 1-2 inches long, 3-5 lines thick. It grows both in woods and in open grassy places and is found in July and August. It is not as highly flavored as some

other russulas but I have no hesitation in placing it among the edible species.

Russula furcata (Pers.) Fr.

FORKED RUSSULA

PLATE 85, FIG. 9-14

Pileus convex becoming nearly plane, centrally depressed or funnel form, glabrous, even on the margin which is at first incurved, then spreading and acute, the thin adnate pellicle subseparable on the margin, greenish or brownish green, flesh white, taste mild; lamellae thickish, subdistant, often forked, with shorter ones intermixed, adnate or slightly decurrent, white; stem equal or nearly so, solid or spongy in the center, white; spores white, subglobose, .0003-.00035 of an inch long, .00025-.0003 broad.

The forked russula grows in woods and is a variable species. Two distinct European varieties have been described but our specimens do not fully agree with either of them nor with the typical form. The cap varies in color from a pale yellowish green or olive green to a dark brownish green, the center often being darker than the margin. Sometimes purplish hues are intermingled with the green, but these are apt to disappear from the dried specimens. The surface is slightly viscid when moist and sometimes it is rugosely roughened or reticulate in places. The margin, though thin, is not striate. The flesh is white and its taste mild. I have detected no bitter flavor to our form but the European form is said to have it. The gills are rather thick, moderately wide apart, persistently white and attached to the stem by their full width. Many of them are forked, the bifurcations occurring most frequently near the stem and the margin. There are also short gills which do not reach the stem. The interspaces are marked by transverse veins or ridges, but I do not find this character ascribed to the European form. The stem is nearly or quite cylindric, solid or when old somewhat spongy in the center, smooth and white.

The cap is 2-4 inches broad; the stem 1.5-3 inches long, 5-8 lines thick. It may be found in July. In my trial of its edible qualities it seemed more tough than some other russulas, but the

flavor was satisfactory and the species is deemed worthy of a place in our edible list even though the European plant has been published by some writers as poisonous.

Pholiota vermifua Pk.

WORMY PHOLIOTA

PLATE 86, FIG. 13–20

Pileus convex or nearly plane, glabrous or occasionally floccose squamose on the margin, sometimes areolate rimose in the center, white, occasionally slightly tinged with yellow; lamellae close, adnexed, white becoming ferruginous brown, generally minutely eroded on the edge; stem hollow, equal, striated at the top, white, the annulus more or less floccose on the lower surface, lacerated or evanescent, white; spores elliptic, ferruginous brown, .0005 of an inch long, .0003 broad.

The wormy pholiota is closely related to the early pholiota, from which it may be separated by its larger size, thicker flesh, stouter stem, whiter color and the tendency of its pileus to crack into areas in the center. It is very liable to be infested by the larvae of insects and this is suggestive of the specific name.

The cap in the young plant is very convex or hemispheric but with advancing age it expands and becomes nearly or quite plane. The central part of the surface often cracks into areas giving it a scaly appearance. It also sometimes splits on the margin. It is smooth or occasionally slightly floccose scaly on the margin from the remains of the veil. The flesh is white. The gills are at first white but they become rusty brown with age. They are closely placed, excavated at the stem end and often whitish and minutely eroded on the edge. The stem is nearly cylindric, hollow, smooth, white and often striated at the top. Its collar is also white, somewhat floccose on the lower surface, often slight, lacerated and disappearing in mature plants, leaving the stem without a collar.

The cap is 2-4 inches broad; the stem 2-3 inches long, 3-5 lines thick. The plants are usually found in rich soil in grain fields, waste places and about manure piles and occur from June to August. When sound and well cooked the flavor is excellent and the mushroom is a fine addition to our table delicacies.

Psilocybe foenisecii (Pers.) Fr.

HAYMAKERS PSILOCYBE. MOWERS MUSHROOM

PLATE 86, FIG. 1–11

Pileus thin, campanulate or convex, obtuse, glabrous, hygrophanous, brown or reddish brown when moist, paler when dry; gills broad, adnate, minutely crenulate on the edge, ventricose, subdistant, brown; stem slender, nearly straight, hollow, rigid, fragile, glabrous, pruinose at the top, pallid or rufescent; spores brown, subelliptic, .0005-.0006 of an inch long, .00025-.0003 broad.

The haymakers psilocybe is a small but very regular, neat and attractive species which gets its name from its usual place of growth. This is in grassy places, on lawns or in meadows, where it is often destroyed by the mower while cutting grass. Its cap is conic or somewhat bell shaped when young, but it becomes more convex with age. When fresh and moist it is dark brown or reddish brown and is usually marked on the margin by darker parallel radiating lines. By the escape of the surplus moisture these lines disappear and the cap becomes paler, assuming a grayish or ashy gray color. The moisture generally escapes first from the center of the cap though the flesh is thicker there than on the margin. This gives a somewhat variegated appearance to the cap while the moisture is escaping, but after the evaporation is completed the color is nearly uniform. Sometimes the center of the cap has a reddish or tan colored hue, in which case this color is generally retained for a time after the escape of the moisture. The cap is generally brown in completely dried and shriveled specimens. The gills are rather broad, not crowded, somewhat narrowed behind and attached to the stem. They are pale brown when young, blackish brown when old. The stem is slender, usually long and nearly straight, hollow, easily broken and paler than the moist cap. It is sometimes tinged with red. The spores in our plant slightly exceed the dimensions given to the spores of the European plant.

The cap is 6-12 lines broad; the stem 2-3 inches long, about 1 line thick. This mushroom grows gregariously in rich grassy places, generally appearing in May and June. Sometimes it appears in great numbers and in successive crops, otherwise it would

be unimportant as an edible mushroom on account of its small size. It has been very abundant in the capitol lawn the last two seasons. It has not a very high flavor but it is harmless and relishable when fried in butter and may therefore be classed as an edible species, though some authors say that there are no edible species of Psilocybe. When uncooked its taste is strong and disagreeable.

Bovista pila B. & C.
ROUND BOVISTA
PLATE 84, FIG. 14-18

Peridium globose or subglobose, 1-3 inches in diameter, the outer coat very thin, at first smooth, white or whitish, soon breaking up into minute scurfy scales or becoming minutely rimose squamulose, finally disappearing and revealing the rather firm papery but persistent, tough, glossy brown inner coat; capillitium dense, persistent, brown; spores even, globose, .00016-.0002 of an inch broad.

The round bovista takes its specific name from its resemblance to a ball. It is quite globose and about 2 inches in diameter when well developed, but sometimes it is more or less irregular. When young it is white or whitish externally and pure white within. It is edible only while in this condition. As soon as the interior begins to change color it is no longer fit to eat and should be discarded. As it advances in age the surface or outer coat shrivels and breaks up into minute scales or scurf and after a time disappears. The inner coat is then smooth and tough like parchment. In maturity it is brown, purplish brown, seal brown or dingy coppery brown, sometimes shining and sometimes showing obscure patches of the exceedingly thin dried and brownish outer coat still adhering to it. It ruptures irregularly. The interior is then seen to be a dense towy and more or less dusty mass similar to the interior of a fully matured puffball. In this condition it often persists through the winter and may be found in fairly good condition for specimens after its hibernation. It grows either in woods, pastures or meadows and in suitable weather may be found from July to September.

F

NEW YORK SPECIES OF CRATAEGUS

The number of published species of Crataegus found in the United States and Canada has increased surprisingly within the last five years. In the edition of Gray's *Manual* issued in 1890, 10 species and three varieties are recognized as belonging to the territory covered by its flora. In the *Illustrated Flora* of Britton and Brown, the second volume of which contains the description of the species of this genus and which was issued in 1897, 15 species and three varieties are recognized, but the territory covered is somewhat larger than that of the *Manual*. Britton's *Manual* issued in 1901 increases the number to 31 species and retains but one variety. In the *Silva of North America*, volume 4, published in 1892, 14 species are described, but in volume 13, which appeared in 1902, the number of species is increased to 84 and the statement is made that this does not include some imperfectly known arboreous species nor the merely shrubby species. In the *Flora of the Southern States* by J. K. Small, issued in 1903, 185 species are described. Varieties are not recognized. In an article devoted to the species of Crataegus found in Rochester and its vicinity and published in the *Proceedings of the Rochester Academy of Science*, volume 4, 1903, C. S. Sargent has described 28 new species and recorded the occurrence of 13 others exclusive of two introduced species which occasionally escape from cultivation. This makes 41 species for the limited area of Rochester and its vicinity, a number greater than that given in Britton's *Manual* for the entire area covered by it two years ago. From these data the inference is scarcely avoidable that many of the recently described species must resemble each other closely and must be founded on slight variations of specific characters. If this inference is well founded, the conclusion is evident that such closely allied species can not be recognized without a thorough knowledge of their distinguishing characters and this knowledge can scarcely be obtained without carefu! study and close observation. To properly represent such species in the

herbarium, a set of good and well prepared specimens taken in the various stages of development from flowering time till the ripening and fall of the fruit, is required.

The genus Crataegus, as represented by our species, includes shrubs and trees which may be roughly but easily separated from species of other genera of the same family by the long spines or thorns with which their trunks and branches are armed. The common and local names applied to these plants are thorn, thorn apple, thorn bush, thorn tree, haw and hawthorn. They are nearly all suggested by this very prominent character of these plants. Some species are small shrubs, only 2 or 3 feet high with a basal stem diameter of scarcely 1 inch, others are trees 30 feet or more high with a basal diameter of the trunk of 1 foot or more. There is no well marked line of distinction between those which are classed as trees and those which should be called shrubs. They insensibly run together. The same species may be a shrub in one place and a tree in another.

The branches of many species are widely spreading giving a broad rounded head to the tree similar to that of an appletree. Often the lower branches spread horizontally and the upper diverge at a small angle giving a more conic outline to the top. The punctate thorn usually has most of its branches horizontally spreading. This gives it a broad, flattened or depressed head and makes the species easily recognizable at a distance. The shrubby species branch from the base and when several clumps grow near each other they form almost impenetrable thickets. The young shoots of the branches are at first green but with advancing age the upper surface gradually assumes a reddish brown or other color which later encircles the whole shoot. During the second or the second and third years the color becomes, in most species, some shade of gray or ashy gray.

The spines that grow from the trunk and branches are modified or peculiarly developed branches. They are themselves sometimes branched and generally they agree in color with the branch to which they are attached. They usually have a bud at one side of the base and sometimes one on both sides. These buds develop

into a leaf, a branch or a cluster of flowers the next year. In breaking a spine from its branch the leaf, branchlet or flower cluster is likely to be torn away with it unless care is taken to avoid it. The young spine is often adorned with one or more narrow foliaceous bracts which are quickly deciduous. The spines of the hawthorn are sometimes elongated and leaf bearing. They then appear like a short leafy branch terminating in a sharp leafless point.

The leaves are alternate and simple but generally more or less distinctly lobed and serrated on the margin. Those of young and vigorous shoots often differ from others on the same tree in size, shape and lobing. The teeth of the margin are nearly always tipped with glands which may vary in color in different species. The teeth themselves vary according to the species. They may be short or long, narrow or broad, blunt or sharp pointed, straight or incurved. The surface of the leaf blades may be smooth, pubescent or scabrous. In many species the upper surface of the young leaves may be coated with deciduous hairs which soon disappear leaving the surface of the mature leaves glabrous. The lower surface is generally paler than the upper. In some species the young unfolding leaves are tinged with brownish red or bronze red but they become green with advancing age. The leaves are normally petiolate and stipulate but the stipules soon disappear and in some species the petioles are short and so widely margined by the decurrent leaf blades that the leaves appear to be sessile. The petioles are often furnished with a few glands which may be either sessile or stalked. They are often more highly colored when old than when young, and are apt to be shorter on vigorous shoots than on fruiting or lateral branches. In general outline the leaf blades may vary in different species from oblanceolate or spatulate to obovate, ovate, oblong ovate, elliptic, oval or orbicular.

The buds are compact and globular with very broad blunt scales. In some species they are covered with a varnish which becomes sticky in warm weather. When they burst in spring the inner scales enlarge rapidly, become elongated and assume pink

reddish or yellowish hues. They are glandular on the margin and in some species on the surface also. These scales are generally soon deciduous.

The flowers in our species are, with one exception, Crataegus uniflora, produced in clusters at the ends of short leafy terminal or lateral branches. In the earliest species to flower in our latitude they appear about the end of the first week in May, in the latest, the first week in June, making the flowering season about one month long. In nearly all cases the flowers open and their petals fall before the leaves are fully developed. The flower stems or peduncles may be long or short, simple or branched, glabrous or hairy, according to the species. The branching peduncles frequently support three flowers each, the central flower opening a little earlier than the two lateral. The calyx is superior and five lobed, the petals are five, the stamens vary from 5 to 20 and the pistils from 1 to 5. The stamens are normally 5, 10, 15 or 20 in any given species, but by the suppression of some or the union of two adjacent filaments such definite numbers are not always found. Nevertheless the number of the stamens is now utilized as a specific character. The color of the anthers may be pale yellow or whitish, pink or rosy red, purplish red or violaceous, and though these colors are very fleeting they are recognized as having, in many cases, specific value. The calyx lobes are generally tipped with a single gland, their margins may be entire or furnished with sessile or stalked glands. They are erect in bud but spreading or reflexed in anthesis and in some species they later become again erect or incurved. In many species they also become red on the inner basal surface as they advance in age. They are sometimes deciduous from the ripe fruit, specially in species belonging to the section Tomentosae. The petals are nearly always white in our species. In one or two they show a tendency to become rosy tinted when they begin to wither. They are quickly deciduous. They are sometimes eroded or wavy on the edge, and are generally furnished with a short claw at the base.

The time of ripening of the fruit extends from the middle of August to the middle of October. The number of fruits in any

cluster is generally less than the number of its flowers because some flowers fail to produce fruit. The fruit may be globose, oval, oblong, ovate or pyriform. It is not invariably of the same size and shape on the same tree but it is now thought to furnish characters of specific value. When the flower stem is short and stout the ripe fruit is likely to be erect. If the flower stem is long and slender the ripe fruit is likely to droop on its stem. In some species the hairiness of the calyx tube of the flower persists and the fruit is hairy, in others it disappears and the fruit is smooth. In some the fruit falls when it is ripe or soon after, in others it hangs on the branches after the leaves have fallen, persisting sometimes till winter or in rare cases and partially till the following spring. In most species the color of the ripe fruit is some shade of red, either orange red, scarlet, vermilion or crimson. In some it is yellow, greenish yellow, or these colors varied with a red cheek. In some species the fruit has a distinct pruinosity or bloom, in others an indistinct or scarcely noticeable bloom is present. Such fruits have a dull or opaque color but a little rubbing of the surface brings out a shining color. The cuticle in some species may be stripped from the fully ripe fruit as from a very ripe peach or pear. The flesh or pulp in some is dry and mealy, in others juicy and soft. It may be whitish, greenish yellow, orange or red. In many species the fruit has an agreeable flavor and is sweet or slightly acid and edible. In some cases it has been utilized in making jelly. In size it varies much, being but three or four lines in diameter in some and nearly an inch in others. In most of our species it is from five to seven lines in diameter. The number of nutlets of the fruit generally equals the number of styles in the flower. In the section Tomentosae the nutlets differ from those of the other sections in having the inner faces excavated. Thorn bushes appear to have in some cases their "off years" like apple-trees. A bush may be loaded with fruit one year and the next have none. Sometimes the fruit fails because of late frosts. This happened about Lake Placid the past season. A severe frost the last week in May killed the stamens and pistils even in the unopened flower buds, and though the petals were apparently

unharmed and the flowers appeared as usual at a distance, the essential organs having been killed, no fruit developed.

Cattle sometimes browse on the twigs of thorn bushes. In such cases the injured branches put forth many new shoots which are short and dense and form an almost impenetrable surface growth. If the bush is low enough to be browsed from top to bottom it gradually assumes a conic shape. If it is so tall that cattle can not reach the ends of the upper branches these continue their normal growth and the lower part of the bush assumes a conic shape and the dense ramification. The whole bush then appears somewhat like two cones with their vertices united, the lower with its vertex pointing upward, the upper with its vertex pointing downward as in an hourglass. This behavior of thorn bushes under the pruning given them by browsing cattle indicates their suitability for hedges.

Herbarium specimens of species of this genus should be collected at three different times. The first collection should be made when the plant is in flower. This collection will show the characters of the flowers, of the young shoots and of the young and unfolding leaves. The second should be made when the leaves have become fully developed. This will show the character of the mature leaves and of the young fruit. The leaves at this time are in much better condition than late in the season when the fruit is ripe. At this time it is also well to collect specimens of the young vigorous shoots, since the leaves on these are often larger and differ more or less in shape from those on older and less vigorous lateral or fertile branches. The third collection should be made when the fruit is ripe. Its object should be to get this in as good condition as possible. Insect larvae and parasitic fungi often injure and deform the fruit and it is well to select as far as possible such specimens as are most free from these pests. Sometimes nearly every fruit on a shrub or tree is found to be injured by them. In some species the fruit ripens very late. In such cases the leaves are ready to fall or have already partly fallen when the fruit is ripe. Specimens bearing ripe fruit should not be severely pressed lest the fruit be crushed. It is well to dry

some of the fruit without pressing. It is important that the three collections be made from the same tree or shrub in order to avoid the danger of confusing two or more closely related species. Sometimes two or more species grow together in one clump and in such cases special care is necessary lest the intermingled branches lead to inextricable confusion of species. To guard against any slip of memory it is well to mark the trunk of every tree or shrub from which specimens are taken, giving to each a number corresponding to a number attached to the specimens taken from it. With a pocket knife shave the rough bark from a small place on one side of the trunk and inscribe the number on this smooth place. It is well in every case to select the same side of the trunk, for example, the north side. Then no time need be lost in looking for the mark on the other sides.

Because the branches are often coarse and crooked and armed with stout spines, strong pressure is necessary to make good herbarium specimens of them. A screw press is recommended for this purpose. It is also well to loosen the spines by partly splitting them from the branch before putting the samples in press. It is desirable to know the date of each collection. It should therefore be recorded on the ticket.

PRUINOSAE

Fruit medium, red when ripe, pruinose; stamens 10-20; leaves thick or subcoriaceous, commonly bluish green, glabrous when mature.

The pruinosity of the unripe fruit is one of the most available characters by which to recognize the species of this group. The two species here described differ in the number of their stamens and the color of their anthers.

Stamens 20, anthers pale yellow or whitish C. conjuncta
Stamens 10, anthers pale purple or pink C. dissona

Crataegus conjuncta Sarg.

Conjoined thorn

Rhodora, 5:57

Large shrub 8-12 feet tall with widely spreading or ascending branches; leaves ovate, broadly ovate or oval, acute or subacu-

minate at the apex, rounded or slightly cuneate at the base, or on vigorous young shoots larger, truncate or slightly concave cuneate, sometimes broader than long, sharply and unequally serrate, generally with 3-4 short, acute or sharp pointed lobes each side, glabrous, yellowish green, 1-2 inches long and nearly as broad at flowering time, larger, thicker and bluish green above when mature, pale below, petioles slender, 6-15 lines long, usually slightly margined and bearing a few scattered glands; inflorescence glabrous, flowers 5-10 in a cluster, peduncles 6-10 lines long, stamens 20, anthers pale yellow or whitish; fruit globose or depressed globose, somewhat angular, often broader than long, pruinose, erect or drooping, red when ripe, crowned by the incurved, spreading or reflexed, persistent calyx lobes, nutlets 4-5.

Clayey hillsides. Albany and North Greenbush. Flowers from the middle to the end of May, fruit ripens from the first to the middle of October and falls gradually, but sometimes a few fruits hang on the branches all winter. The unfolding leaves are sometimes tinged with brownish red. On young and vigorous shoots the basal pair of leaf lobes are sometimes larger and more widely spreading than the others.

Crataegus dissona Sarg.

Dissonant thorn

Rhodora, 5:60

Shrub 6-10 feet tall with widely spreading or nearly erect branches; leaves ovate, broadly ovate or rhomboidal, 1-1.5 inches long and nearly as broad at flowering time, thin and yellowish green, acute or sharp pointed at the apex, rounded or broadly cuneate at the base, often tinged with brownish red as they unfold, sharply serrate, with 3-4 slight, acute or sharp pointed lobes each side, glabrous, larger, firmer and bluish green above when mature, paler below, those on vigorous young shoots larger and often truncate at the base, sometimes with the basal pair of lobes enlarged, petioles slender, 6-12 lines long, often slightly enlarged and glandular at the top; flowers on slender glabrous peduncles, 5-8 in a cluster, stamens generally 10, sometimes 7-9, anthers pale purple or pink; fruit globose or depressed globose, pruinose, dark

red or crimson when ripe, the boat-shaped calyx lobes erect or spreading, their tips often deciduous, nutlets 3-5.

Clayey soil. Albany, Copake, Lansingburg and Thompsons Lake. Flowers about the middle of May, fruit ripens from the first to the middle of October. Distinguished from the preceding species by its fewer stamens, pink or purplish anthers and crimson fruit. C. p r u i n o s a differs from both in having 20 stamens with pink anthers. It is a common species about Albany.

INTRICATAE

Fruit medium, yellowish green, orange red or crimson, nutlets 2-5, ridged on the back; corymbs few flowered; leaves thick, subcoriaceous.

Small, rather late flowering shrubs.

Leaves hairy when young	1
Leaves glabrous	C. i n t r i c a t a
1 Anthers pink or pinkish purple	C. p e c k i i
1 Anthers pale yellow	C. m o d e s t a

Crataegus intricata Lange

Intricate thorn

Small shrub 3-8 feet tall with few erect or spreading branches; leaves ovate, broadly ovate, elliptic or oblong elliptic, thin when young, becoming thick and firm with age, acute at the apex, broadly rounded or cuneate at the base, sharply serrate, with 3-4 acute lobes each side, the basal pair, on leaves of young vigorous shoots, often enlarged and distinctly separated from the pair above by deep sharp excavations, glabrous both sides, petiole slender, 4-12 lines long, glandular, slightly margined at the apex; flowers in clusters of 4-8, on short, mostly glabrous peduncles, calyx lobes lanceolate, slightly laciniate serrate, stamens 5-10, anthers pale yellow; fruit erect, subglobose or obovate, pointed at the base, pale red or orange red, nutlets 3-4.

Hillsides and shaly knolls. Albany and Lansingburg. Flowers May 20 to June 1, fruit ripens the last week in September and the first week in October, and soon falls. In falling it often carries the peduncle with it. The spines are slender, straight or nearly so and usually 1-1.5 inches long.

Crataegus modesta Sarg.

Modest thorn

Rhodora, 3:28

Small shrub 2-5 feet tall with irregular short branches; leaves broadly ovate, ovate or oblong ovate, acute at the apex, rounded or cuneate at the base, on young and vigorous shoots often truncate or slightly cordate, serrate, with 3-4 short, broad, acute lobes each side, at flowering time pale green and hairy above, paler and villose below, specially on the midrib and principal veins, when mature thick and firm, dark green and scabrous above, much paler below, 1.5-2 inches long, 1-1.5 broad, petioles 4-12 lines long, glandular, villose, margined at the apex, sometimes on vigorous shoots nearly to the base, often becoming red with age; flowers large, 3-6 in a cluster, on short, villose, mostly simple, peduncles, calyx tube hairy, its lobes slightly hairy, laciniate serrate, reflexed in flower, stamens 10, anthers pale yellow; fruit erect, subglobose, short oblong or pyriform, greenish yellow, orange red or greenish with a red cheek, hairy, nutlets 3.

Clayey and shaly soil. Albany, Rensselaer and Lansingburg. Flowers open the last week in May or the first week in June, fruit ripens late in September. The spines are variable, being slender or stout, straight or curved, and 1-1.5 inches long. On some clumps they are very scarce. The young shoots are more or less villose.

Crataegus peckii Sarg.

Peck's thorn

Rhodora, 5:63

Small shrub 2-6 feet tall, sparingly branched; leaves ovate or broadly ovate, acute at the apex, broadly rounded or concavely cuneate at the base, on young and vigorous shoots often truncate, serrate, divided into 3-4 short, broad, acute or blunt lobes each side, when young, hairy above with appressed whitish hairs, villose below on the midrib and principal veins, when mature, firm, dark green and scabrous above, much paler below, the basal pair of lobes often much enlarged and more distinct, 1.2-2 inches long, nearly as broad or on young vigorous shoots 2-2.5 inches long; flowers large, 3-6 in a cluster, supported on short, villose, simple peduncles,

calyx tube glabrous, its lobes glabrous, laciniate serrate above the middle, stamens 10, anthers pink or pinkish purple, filaments usually white; fruit erect on short slightly villose peduncles, subglobose or short oblong, glabrous, yellowish green when ripe, the calyx lobes mostly deciduous, nutlets 3-4.

Shaly soil. Lansingburg. Flowers the last week in May or the first week in June, fruit ripens early in October and soon falls. The species is closely related to C. modesta from which it may be separated by its mostly broader leaves, its less hairy inflorescence, pink or pinkish purple anthers and glabrous yellowish green fruit. In this as in the two preceding species the fruit is crowned by a prominent rim which surrounds the calyx cup. The spines are slender, straight or slightly curved and 1.2-2.5 inches long.

MOLLES

Fruit, large, bright red and shining when ripe, often hairy, specially when young; inflorescence villose tomentose; leaves large, broad, softly hairy when young.

The three species here recorded are trees or large shrubs with edible fruit.

Anthers pale yellow or whitish C. champlainensis
Anthers pink, dark red or purple 1
1 Leaves often convex, calyx lobes hairy on the inner surface C. pringlei
1 Leaves plane, calyx lobes hairy on both surfaces C. exclusa

Crataegus champlainensis Sarg.

Champlain thorn

Rhodora, 3:20. Silva N. A. 13:105, t. 669. N. Y. State Mus. 55th An. Rep't, p.944

Tree or large shrub 10-20 feet tall with widely spreading branches; leaves ovate or broadly ovate, 2-2.5 inches long, 1.5-2 broad at flowering time, larger when mature and on vigorous young shoots, acute at the apex, rounded, truncate, broadly cuneate or slightly cordate at the base, slightly and sharply lobed, coarsely and sharply serrate, when young pubescent above with whitish appressed hairs, pubescent beneath and villose on the

midrib and principal veins, petioles villose and glandular; corymbs commonly few flowered, peduncles and calyx covered with long matted whitish hairs, stamens 10, anthers pale yellow or whitish; fruit oblong obovate or subglobose, often narrowed toward the base, bright red or scarlet, 7-8 lines long, 6-7 broad, nutlets 3-5.

Clayey soil. Port Henry, Crown Point, Fort Ann, Albany. The trees found in the vicinity of Albany differ from those found in the more northern localities in having broader and more rounded leaves, which are sometimes blunt at the apex and often have the margin coarsely wavy, curved or arched as if there was an excessive development of the lateral tissues. The anthers are whitish, not pale yellow as in the type, and the fruit is globose or oval, slightly umbilicate and persistently hairy. It is the first species to blossom about Albany, the flowers appearing from May 10-15, and the fruit ripens and falls early in September. Perhaps these trees belong to a distinct species. The trees in the Fort Ann locality have recently been cut down.

Crataegus pringlei Sarg.

Pringle's thorn.

Rhodora, 3:21. Silva N. A. 13:111, t. 672. N. Y. State Mus. 55th An. Rep't, p.944

Tree or large shrub 12-25 feet tall with widely spreading branches and a broad rounded head; leaves broadly ovate or oval, 1-2 inches long and nearly as broad at flowering time, acute or bluntly pointed at the apex, subtruncate or broadly cuneate at the base, coarsely and sharply serrate, with 3-4 short broad acute lobes each side, pubescent above with short appressed whitish hairs, slightly villose below on the principal veins and midrib, yellowish green above, paler below, often convex by the deflection of the margins, petioles slender, villose; corymbs few flowered, stamens 5-10, anthers pink or pinkish purple, calyx lobes hairy on the inner surface, peduncles short, villose; fruit subglobose, oval or oblong, sometimes slightly narrowed toward the base, generally hairy at the ends, 6-7 lines long and nearly as broad, bright red or scarlet, the calyx lobes spreading or erect.

Clayey soil. Albany and Albia, Rensselaer co.

When in flower the colored anthers easily separate this species from the preceding one, later it may be recognized by the convexity of many of the leaves. The young unfolding leaves are sometimes tinged with red. On vigorous young shoots the leaves often have the basal pair of lobes somewhat enlarged and more distinct than the others.

Crataegus exclusa Sarg.

Excluded thorn

Rhodora, 5: 108

Shrub 8-12 feet tall, with widely spreading or ascending branches; leaves similar to those of the preceding species but without the convexity seen in them; flowers similar but the calyx and peduncles more densely villose or tomentose, the calyx lobes more narrow, elongated and hairy on both surfaces; fruit longer and more narrowed toward the base.

Clayey soil. Crown Point and Fort Ann. May, September.

Formerly united with C. p r i n g l e i but separated from it because of its more shrubby habit, more hairy inflorescence and longer fruit.

DILATATAE

Fruit medium or large, subglobose, bright red or scarlet, nutlets 5, ridged on the back; flowers having 20 stamens with rose colored anthers; leaves broad, thin.

Crataegus dilatata Sarg.

Broad leaved thorn

Bot. Gaz. 31: 9. Silva N. A. 13: 113, t. 673

Tree or large shrub 10-20 feet tall with widely spreading or ascending branches and a broad rounded head; leaves thin, ovate or deltoid ovate, acute at the apex, subtruncate or slightly cordate at the base, with 4-6 short, acute or sharp pointed lobes each side, serrate with unequal sharp pointed teeth, when young minutely pubescent above with short, stiff, appressed, whitish hairs, glabrous below or with a few hairs on the midrib and in the axils of the principal veins, 1.5-3 inches long when mature, nearly as broad, those of vigorous young shoots often with the basal pair

of lobes enlarged and more distinct, petioles slender, 8-18 lines long, slightly villose in the furrow when young, distantly glandular, often reddish toward the base, becoming more red with age, this color sometimes extending to the midrib and principal veins; corymbs 6-10 flowered, peduncles slightly hairy or glabrous, rather long, stamens 20, anthers rose color, calyx tube slightly hairy, its lobes glandular serrate, hairy on the inner surface; fruit globose or oval, 6-8 lines long, 6-7 broad, umbilicate at the base, drooping, bright red, nutlets 4-5, flesh yellowish, well flavored, edible.

Clayey soil. Flowers the last week in May, fruit ripens in September. Thompsons Lake, Albany co. and Gansevoort, Saratoga co. In the latter locality it forms a tree 15-20 feet tall with a trunk diameter of 4-6 inches. On some trees the fruit is globose, on others it is oval. The leaves sometimes become convex as in C. p r i n g l e i. The fruit stems sometimes become red in the upper part.

LOBULATAE

Fruit medium or large, subglobose or oblong, bright red or crimson, nutlets 3-5, distinctly grooved on the back; inflorescence villose or glabrous, stamens 5-15, anthers rose color.

Leaves glabrous beneath, stamens 5-8 C. h o l m e s i a n a
Leaves somewhat hairy beneath, stamens 5-10 C. l o b u l a t a

Crataegus holmesiana Ashe

Holmes thorn

Bot. Gaz. 31: 10. Silva N. A. 13: 119, t. 676

Tree or large shrub 12-25 feet tall with widely spreading or ascending branches; leaves thin, ovate, 1-1.5 inches long, 9-15 lines broad at flowering time, larger and firmer when mature and on vigorous young shoots sometimes with the basal pair of lobes enlarged and more divergent, acute at the apex, broadly rounded or subtruncate at the base, sharply serrate with slender pointed teeth, with 4-5 short acute lobes each side, pubescent above when young with minute appressed whitish hairs, glabrous and slightly paler below, petiole slender, 6-12 lines long, glabrous or with a few hairs and reddish glands; flowers 8-12 in a cluster, 5-8 lines broad, on slender, glabrous or slightly hairy peduncles, calyx glabrous, often tinged with red, the lobes narrow, linear, slightly

glandular, stamens generally 5, sometimes 5-8, anthers purple; fruit subglobose, oblong or obovate, generally narrowed toward the base, bright red or crimson, crowned with the persistent, erect or incurved calyx lobes, nutlets 3-5, flesh yellow.

Clayey soil. Crown Point, Fort Ann, Thompsons Lake and Albany. It flowers from May 15-25, fruit ripens the last week in August and the first week in September. The foliage is commonly yellow green, but it is sometimes dark green.

Crataegus lobulata Sarg.

Lobulate thorn

Rhodora, 3: 22. Silva N. A. 13: 117, t. 675

Tree 15-30 feet tall and a trunk diameter of 6-12 inches; leaves oval, ovate or oblong ovate, at flowering time 1.5-2.5 inches long, 1-2 broad, larger when mature, pubescent with soft appressed whitish hairs above, slightly hairy below, specially on the midrib and principal veins, acute at the apex, rounded or broadly cuneate at the base, sharply serrate, with 4-5 sharp pointed distinct lobes on each side, petioles slender, loosely villose or tomentose, 1-1.5 inches long, becoming reddish or tinged with red in maturity; flowers on slender, villose or tomentose peduncles, the calyx often hairy below and its lobes hairy on the inner surface, stamens usually 10, sometimes 5-10, anthers reddish purple; fruit oblong or subglobose, crowned by the persistent erect or incurved calyx lobes, when ripe, crimson, 6-8 lines long and nearly as broad, nutlets 3-5, flesh yellow, edible.

Clayey soil. Crown Point. It blossoms from the 20th to the end of May and ripens its fruit late in September. Its foliage is yellowish green. It is closely related to the preceding species from which it may be separated by its larger size, the hairiness of the lower surface of the leaves, the more hairy inflorescence, more numerous stamens and its later ripening fruit.

FLABELLATAE

Fruit medium, scarlet or dark red, nutlets 3-5, ridged on the back; stamens 10-20; leaves membranaceous but firm when mature.

Anthers pink or purplish	C. contigua
Anthers pale yellow or whitish	C. irrasa

Crataegus contigua Sarg.

Contiguous thorn

Rhodora, 5: 115

Shrub 6-10 feet tall with spreading or ascending branches; leaves thin, ovate, acute or acuminate at the apex, rounded or broadly cuneate at the base, serrate, with 4-5 distinct, sharp pointed or acuminate lobes each side, at flowering time pale green and clothed above with short appressed whitish hairs, glabrous below, when mature, firm, dark green above, paler below, 1.5-2.5 inches long, 1-2 broad, petioles slender, glabrous, slightly glandular, 6-12 lines long; flowers on slender glabrous peduncles, calyx lobes abruptly narrowed from broad bases, linear, entire or with occasional glands toward the base, stamens 20, anthers purple or pinkish purple; fruit erect or drooping, subglobose or oblong, scarlet, flesh yellow, nutlets 4-5.

Shaly soil near Lansingburg. Flowers open about the middle of May, fruit ripens early in September and soon falls. In our plants the flowers open and the fruit ripens two or three weeks earlier than in the type and the number of stamens ranges from 12-19. In no case have I found a flower with 20 stamens. Nevertheless these variations do not seem to be of sufficient importance to warrant a separation of the plants. The unfolding leaves are tinged with brownish red.

Crataegus irrasa Sarg.

Unpolished thorn

Rhodora, 5: 116

Shrub 6-12 feet tall with numerous slender spreading or ascending branches; leaves thin, ovate or oval, acute at the apex, cuneate at the base, laciniate serrate, when young clothed above with appressed whitish hairs, villose below on the midrib and principal veins, when mature firm, dark green and shining above, paler or yellowish green below, petioles 6-12 lines long, slender, slightly margined at the apex, sparingly glandular; flowers 6-7 lines broad, supported on villose peduncles, calyx tube densely villose, its lobes lanceolate, glandular serrate, villose, reflexed, appressed, stamens 20, anthers pale yellow; fruit subglobose or oblong, dark red, nutlets 4-5.

Clayey soil. North Greenbush. The plants which are here referred to this species diverge so much from a rigid agreement with the description of the species to which we have referred them that it seems best to consider them a variety which may be called var. d i v e r g e n s.

It is characterized as follows:

Leaves oval, serrate with blunt gland-tipped teeth, divided above the middle into 4-5 short narrow strongly pointed lobes each side, petioles villose; corymbs 5-10 flowered, stamens 10-18, anthers whitish; fruit globose or oval.

The young shoots are villose tomentose. The flowers open about the middle of May and the fruit ripens the last week in August or early in September, which is two or three weeks earlier than in the type. Only a single clump of this shrub was found. It approaches C. d e n s i f l o r a in its characters but differs from it in its more numerous stamens and in having the lower surface of the leaves hairy on the midrib and principal veins.

TENUIFOLIAE

Fruit medium, oblong, pyriform or subglobose, crimson or scarlet, nutlets 2-5; inflorescence glabrous or nearly so, stamens 5-20, anthers pink, rose color or dark red; leaves membranaceous, generally pubescent on the upper surface when young, glabrous or scabrous when mature.

The three species here recorded may be tabulated as follows:

Leaves ovate or oblong ovate	C. a s c e n d e n s
Leaves ovate, oval or rhomboidal	1
1 Calyx lobes hairy on the inner surface	C. m a t u r a
1 Calyx lobes glabrous on the inner surface	C. d e l u c i d a

Crataegus ascendens Sarg.

Ascending thorn

Rhodora, 5: 141

Shrub 6-10 feet tall with slender ascending branches bearing short, straight or slightly curved spines rarely more than an inch long; leaves thin, ovate or oblong ovate, at flowering time 1.5-2 inches long, 8-15 lines broad, acuminate at the apex, rounded or cuneate at the base, finely and sharply serrate, with 4-5 acuminate

lobes each side, often tinged with brownish red as they unfold and clothed above with minute appressed whitish hairs which soon disappear, dark yellowish green above, paler below, larger, darker green and glabrous when mature, petioles slender, 9-15 lines long, dotted with a few scattered glands and slightly margined at the apex; flowers 6-12 in a cluster, on slender rather long glabrous peduncles, calyx lobes narrow, elongated, entire or with a few minute glands, stamens 5-10, anthers pink or pinkish purple; fruit subglobose obovate or oblong, dark red when ripe, drooping, the calyx lobes subpersistent, spreading or reflexed, nutlets 3-4.

Clayey soil. North Greenbush and Rensselaer. Flowers May 12-20, fruit ripens during September. This species is very distinct and easily recognized by its peculiar oblong ovate leaves with acuminate apex and on fertile branches with cuneate base, making them pointed at each end. On young and vigorous shoots they are usually broadly rounded at the base, and are sometimes 3.5-4 inches long and 2-2.5 inches broad. They are generally more elongated when growing in the borders of woods than when in more open exposed places. The autumn buds are clothed with a varnish which is sticky in warm weather. Though found in several places on the east side of the Hudson river, no example of it has yet been found on the west side of the river.

Crataegus matura Sarg.

Mature thorn

Rhodora, 3: 24

Shrub 5-10 feet tall with many slender ascending or nearly erect branches or occasionally with the lower widely spreading; leaves broadly ovate, oval or rhomboidal, thin, acute or acuminate at the apex, rounded or cuneate at the base, finely and sharply serrate, deeply and sharply divided into 4-6 very distinct sharp pointed or acuminate lobes on each side, yellowish green when young and clothed with short appressed whitish hairs, darker green and glabrous when mature, 2-2.5 inches long, 1.5-2 inches broad, petioles slender, 6-12 lines long, slightly glandular and sometimes wing margined at the apex; flowers 4-8 in a cluster on short glabrous or slightly hairy peduncles, calyx lobes elongated, narrow, entire or slightly glandular, often red at the tips

slightly hairy on the inner surface, becoming bright red at the base, stamens usually 10, sometimes 5-9, anthers red or reddish purple; fruit subglobose or oval, about 6 lines long, 5-6 broad, dark red or crimson, nutlets 2-5, flesh yellow, pleasant, edible.

Clayey soil and rocky pastures. Gansevoort, Saratoga co. and Lake Pleasant, Hamilton co. Flowers in May, ripens its fruit the latter part of August.

The early ripening of the fruit is one of the distinguishing characters of the species. In our specimens the fruit is scarcely oblong as in the typical form, and the styles are 2-3, but in other respects the agreement of the characters is good. The bright red color of the inner bases of the calyx lobes in the Gansevoort specimens contrasts beautifully with the pale green color of the immature fruit.

Crataegus delucida Sarg.

Delucid thorn

Rhodora, 5: 139

Shrub 6-10 feet tall with erect or ascending branches; leaves thin, ovate, broadly ovate or oval, acute, sharp pointed or acuminate at the apex, broadly rounded, subtruncate or rarely broadly cuneate at the base, finely serrate, with 4-6 distinct, sharp pointed or acuminate lobes each side, generally tinged with bronze red when they unfold and then covered above with short appressed whitish hairs, at flowering time yellowish green, 1-1.5 inches long, 9-18 lines broad, paler and glabrous below, larger, darker green and glabrous above when mature, petioles slender, 6-12 lines long, usually shorter on young and vigorous shoots with the blades larger and broader, slightly glandular; flowers 6-12 in a cluster, about 6 lines broad, on slender branched glabrous peduncles, calyx lobes narrow, elongated, entire or with few minute glands, often red at the tips, stamens usually 5-8, sometimes 10, anthers red or reddish purple; fruit oblong, bright red or scarlet, drooping, the calyx lobes spreading or reflexed, often deciduous from the ripe fruit, nutlets 3-4, flesh yellow.

Clayey hillsides and rocky pastures. Albany and Sandlake. Flowers about the middle of May, fruit ripens during the last half of September or early in October.

This is one of the prevailing species on the hillsides north of Albany. The flowers have a strong potash odor. It is closely related to C. acutiloba Sarg. with which it was formerly united, but its flowers are smaller and its nutlets more numerous.

COCCINEAE

Fruit medium, subglobose, crimson or scarlet when ripe, nutlets 2-5, distinctly ridged on the back; leaves thin or subcoriaceous.

Anthers pale yellow or whitish	C. gravesii
Anthers purple or red	1
1 Stamens 20	C. brainerdi
1 Stamens 10	C. praecoqua
1 Stamens less than 10	C. egglestoni

Crataegus gravesii Sarg.

Graves thorn

Rhodora, 5: 159

Shrub or small tree with widely spreading or ascending branches; leaves ovate, obovate, elliptic or subrotund, thin, acute or rounded at the apex, rounded or cuneate at the entire base, unequally serrate with rather broad blunt teeth, with 3-4 short, broad, acute or rather blunt lobes each side, at flowering time pale green, glabrous or with a few scattered hairs above, when mature firm, glabrous, dark green and shining above, paler below, 1-2 inches long and nearly or quite as broad, petioles slender, 4-12 lines long, slightly margined at the apex, sometimes slightly villose and glandular when young; flowers 5-12 in a cluster, on slender, short, glabrous or slightly hairy peduncles, calyx glabrous, its lobes narrow, elongated, minutely glandular, stamens 4-8, occasionally 10, anthers pale yellow or whitish; fruit globose or depressed globose, erect, pale red or orange red when ripe, crowned by the short erect or spreading calyx lobes, nutlets 2-3.

Clayey soil. Albany, North Greenbush and Westport. Flowers late in May or early in June, fruit ripens late in September. Closely related to C. coccinea rotundifolia, from which it may be separated by its thinner leaves, mostly fewer stamens, paler fruit and fewer nutlets. Our examples are shrubs more glabrous than the type. The young unfolding leaves are sometimes tinged with brownish red.

Crataegus praecoqua Sarg.

Early thorn

Rhodora, 3:27, 5:167

Shrub 8-10 feet tall with spreading branches; leaves ovate, oval or rhomboidal, acute or blunt at the apex, broadly cuneate at the base or on young vigorous shoots sometimes rounded, serrate, slightly divided into numerous short, narrow, sharp pointed lobes on each side, at flowering time thin, pale green and clothed above with short appressed whitish hairs, paler below and villose along the midrib and principal veins, when mature thick, dark green, shining, glabrous or scabrous above, paler below, 1.5-2 inches long, nearly or quite as broad, petioles stout, 4-6 lines long, margined on the upper part; flowers on villose, often branching peduncles, calyx tube hairy, its lobes narrow, elongated, glandular serrate, stamens 10, anthers pink; fruit subglobose, erect or drooping, slightly hairy, dark red.

Clayey soil. Crown Point. Flowers the latter part of May, fruit ripens the last of August or early in September. The species was first published under the name Crataegus praecox, but this was afterward changed to C. praecoqua.

Crataegus egglestoni Sarg.

Eggleston's thorn

Rhodora, 3:30

Shrub 5-10 feet tall with slender spreading or ascending branches; leaves oval, elliptic or suborbicular, acute or sharp pointed at the apex, broadly rounded or cuneate at the base, serrate, divided into 4-5 short inconspicuous acute lobes on each side, at flowering time thin, yellow green and hairy above with short whitish appressed hairs, paler and glabrous below, when mature thick or subcoriaceous, dark green and scabrous above, 1.5-2 inches long and nearly or quite as broad, petioles slender, 6-12 lines long, slightly margined at the apex, sparingly glandular; flowers 6-8 lines broad, 5-10 in a cluster, on rather long, loosely villose often branched peduncles, calyx tube glabrous or slightly hairy, its lobes entire or minutely glandular serrate, hairy on the inner surface, stamens 5-8, usually 5, anthers red or rose color; fruit subglobose or oval, crimson when ripe, the mostly persistent calyx lobes reflexed, appressed, nutlets 2-3, 3 lines long.

Clayey and shaly soil, Crown Point and Lansingburg. Flowers May 20-30, fruit ripens in September. The shrubs in the station near Lansingburg have recently been cut down. The spines are slender, straight or nearly so and 1.5-2 inches long. This species was originally placed in the section Anomalae, but there seems to be no character by which it may be clearly separated from the section in which it is here placed.

Crataegus brainerdi Sarg.

Brainerds thorn

Rhodora, 3:27

Shrub 6-10 feet tall with ascending or suberect branches; leaves at first thin, ovate or broadly ovate, acute or acuminate at the apex, rounded or broadly cuneate at the base, or on young and vigorous shoots often subtruncate or slightly cordate, sharply serrate, divided into 4-5 slight, acute or sharp pointed lobes each side, when young slightly hairy above with short appressed whitish hairs, glabrous below, when mature thicker and firmer, dark green above, paler below, 1.5-2 inches long, 1-1.5 broad, larger on young and vigorous shoots, petioles slender, 4-12 lines long, glabrous, with few or no glands; flowers in clusters of 6-12, 9-10 lines broad, very fragrant, supported on slender, glabrous, simple or branched peduncles, calyx lobes linear lanceolate, entire or slightly glandular, often tinged with red, stamens 20, anthers bright red, filaments elongated, often becoming red or pink, very persistent; fruit erect, subglobose or short oblong, 5-6 lines long, 4-5 broad, bright scarlet, flesh yellow, edible, nutlets 3-4.

Rocky or bushy pastures. Sandlake, Rensselaer co. Flowers May 15-25, fruit ripens the latter part of September. The long erect persistent reddish filaments afford an attractive and easily recognized character. They sometimes remain plump and fresh till the beginning of September. The blossoms have a decided potash odor and are very attractive to honey bees. The styles are generally 3 but occasionally 4. The species is rare with us, but well marked and beautiful both in flower and fruit.

TOMENTOSAE

Fruit small or medium, subglobose, oval or pyriform, orange red or scarlet, nutlets 2-5 with a cavity on each of the ventral faces; flowers usually many in a cluster; leaves thin or coriaceous, usually pubescent beneath.

Crataegus succulenta Link

Succulent thorn

Silva N. A. 13: 139, t. 181

Shrub or bushy tree 8-15 feet tall with widely spreading or ascending branches; leaves elliptic or subrhomboidal, acute or sharp pointed at the apex, cuneate at the entire base, serrate, with 4-6 short, acute lobes each side above the middle, at flowering time thin, slightly hairy above, pubescent beneath, when mature coriaceous, dark green and glabrous above, paler below, usually 2-2.5 inches long, 1.5-2 inches broad, on young and vigorous shoots somewhat larger and broadly or concavely cuneate or rounded at the base, petioles stout, 4-8 lines long, margined at the apex, often becoming red or reddish with age; flowers 7-8 lines broad, many in a cluster, supported on long, slender villose branching peduncles, calyx tube hairy or glabrous, its lobes laciniately glandular serrate, elongated, soon reflexed, hairy, stamens 15-20, anthers small, pink; fruit globose, scarlet, drooping, 4-6 lines long, flesh yellow, juicy, edible, nutlets 2-3, 3 lines long.

Clayey soil. Albany and Albia, Rensselaer co. Flowers from May 15-25, fruit ripens in September and usually hangs on the branches till late in October. Sometimes a few persist through the winter.

G

SUPPLEMENTARY LIST OF PLANTS OF THE SUSQUEHANNA VALLEY

BY FRANK E. FENNO

Dryopteris goldieana (Hook.) Gray

Aspidium goldieanum Hook.

Goldie's shield fern

Hillsides near Nichols. Infrequent. August.

Panicum walteri Pursh

Panicum crus-galli var. hispidum Torr.

Cockspur grass

Common along the river. August–October.

Panicum minus (Muhl.) Nash

Wood panicum

Dry woods and thickets near Nichols. Not common. August, September.

Eragrostis major Host

Pungent meadow grass

Roadsides and along railways. Frequent. August, September.

Panicularia elongata (Torr.) Kuntze

Glyceria elongata Trin.

Long manna grass

In a swamp near Smithboro. Infrequent. August, September.

Eleocharis palustris (L.) R. & S.

Creeping spike rush

Low wet grounds, specially along the river. Common. August, September.

Smilax rotundifolia L.

Green brier. Catbrier

Thickets near Nichols. Rare. Stem more or less quadrangular and high climbing. Leaves five nerved. May, June.

Lemna trisulca L.

Ivy-leaved duckweed

Ditches and sloughs. Frequent. July, August.

Corylus americana Walt.

Hazelnut

Thickets along the river. Common. Apparently not found here on the uplands. March, April.

Corylus rostrata Ait.

Beaked hazelnut

Fence rows and thickets. Common. April.

Betula populifolia Marsh.

White birch

Plentiful along the valley road 3 miles south of Owego. May.

Betula lenta L.

Black birch

Rich woodland. Common. April, May.

Betula lutea Mx.

Yellow birch

Rich moist woodland. Common. April, May.

Alnus incana (L.) Willd.

Tag alder

Borders of streams and swamps. Common. February–April.

Alnus rugosa (Du Roi) K. Koch

A. serrulata Willd.

Smooth alder

Mutton hill pond. This is its only station. February–April.

Fagus americana Sweet

Fagus ferruginea Ait.

Beech

Scattered throughout our territory. May.

Castanea dentata (Marsh.) Borkh.

Castanea sativa var. americana Wats.

Chestnut

A very common tree. July.

Syndesmon thalictroides (L.) Hoffmg.

Anemonella thalictroides Spach

Rue anemone

Woods and thickets. Common. April–June.

Rubus occidentalis L.

Black raspberry

Fence rows and neglected fields. Common. May, June.

Rhus copallina L.

Mountain sumac. Dwarf sumac. Upland sumac

Dry soil 3 miles south of Owego. Rare. June, July.

Parsonsia petiolata (L.) Rusby

Cuphea viscosissima Jacq.

Blue waxweed. Tarweed

Abundant in a neglected field near Nichols. August–October. Fine flowering specimens were collected as late as Oct. 24. The whole plant is very viscid pubescent.

Mitchella repens L.

Partridge berry. Twin berry

Woods. Common. June.

Cephalanthus occidentalis L.

Button bush

Swamps. Common. July, August.

Galium aparine L.

Cleavers

Damp shaded ground. Common. Summer.

Galium pilosum Ait.

Hairy bedstraw

Dry bushy places. Frequent. Summer.

Galium lanceolatum Torr.

Torrey's wild liquorice

Dry woods. Common. Summer.

Galium circaezans Mx.

Wild liquorice

Dry woods. Common. May–July.

Galium boreale L.

Northern bedstraw

Rocky soil, specially along streams. Common. June.

Galium asprellum Mx.

Rough bedstraw

Swamps and low grounds. Common. Summer.

Galium triflorum Mx.

Sweet-scented bedstraw

Damp woodland. Common. Summer.

EXPLANATION OF PLATES

PLATE 0

Inocybe castanea Pk.

CHESTNUT INOCYBE

1, 2 Two immature plants

3, 4 Two mature plants

5 Vertical section of the upper part of an immature plant

6 Vertical section of the upper part of a mature plant

7 Transverse section of a stem
8 A cystidium, x 400
9 Four spores, x 400

Inocybe squamosodisca Pk.

SCALY DISKED INOCYBE

10 Immature plant
11 Mature plant showing scaly disk
12 Vertical section of the upper part of a mature plant
13 Four spores, x 400

Inocybe excoriata Pk.

EXCORIATED INOCYBE

14 Immature plant
15, 16 Mature plants showing the excoriated surface of the caps
17 Vertical section of the upper part of an immature plant
18 Vertical section of the upper part of a mature plant
19 Four spores, x 400

Inocybe fallax Pk.

FALLACIOUS INOCYBE

20 Immature plant
21 Mature plant
22 Vertical section of the upper part of an immature plant
23 Transverse section of a stem
24 A cystidium, x 400
25 Four spores, x 400

Tricholoma subluteum Pk.

TWO COLORED TRICHOLOMA

26 Immature plant
27 Mature plant
28 Vertical section of the upper part of a plant
29 Four spores, x 400

Stereum burtianum Pk.

BURT'S STEREUM

30 Small plant
31 Plant with lacerated margin of the pileus
32 Plant with incomplete pileus
33 Three plants with confluent pilei
34 Four spores, x 400

PLATE 84

Collybia familia Pk.

FAMILY COLLYBIA

1 Cluster of small plants
2 Cluster of large plants with the center of the cap colored
3 Single large plant
4 Single large plant with the center of the cap colored
5 Vertical section of the upper part of a large plant
6 Transverse section of a stem
7 Four spores, x 400

Collybia acervata Fr.

TUFTED COLLYBIA

8 Cluster of eight plants, four with caps moist and more highly colored
9 Plant with pale tan colored cap
10 Plant with whitish cap
11 Vertical section of the upper part of a large plant
12 Transverse section of a stem
13 Four spores, x 400

Bovista pila B. & C.

ROUND BOVISTA

14 Immature plant
15 Mature plant ruptured at the apex
16 Vertical section of a young plant in edible condition
17 Part of a branching filament of the capillitium, x 400
18 Four spores, x 400

PLATE 85

Russula mariae Pk.

MARY'S RUSSULA

1, 2 Immature plants
3 Mature plant
4 Immature plant of darker color
5 Mature plant of darker color
6 Vertical section of the upper part of an immature plant
7 Vertical section of the upper part of a mature plant
8 Four spores, x 400

Russula furcata (Pers.) Fr.

FORKED RUSSULA

9 Immature plant
10 Mature plant with the cap partly expanded
11 Mature plant with the cap fully expanded
12 Vertical section of the upper part of an immature plant
13 Vertical section of the upper part of a mature plant
14 Four spores, x 400

PLATE 86

Psilocybe foenisecii (Pers.) Fr.

HAYMAKER'S PSILOCYBE

1–3 Immature plants with moist striatulate caps
4 Plant after the moisture has partly escaped from the cap
5–7 Mature plants with caps destitute of moisture
8, 9 Vertical sections of the upper part of two plants
10 Transverse section of a stem
11 Four spores, x 400

Pholiota vermiflua Pk.

WORMY PHOLIOTA

12 Young plant with gills hidden by the veil
13, 14 Immature plants showing the whitish gills
15 Mature plant with the cap fully expanded
16 Mature plant with the cap rimosely areolate
17 Vertical section of the upper part of an immature plant
18 Vertical section of the upper part of a mature plant
19 Transverse section of a stem
20 Four spores, x 400

N. Y. STATE MUS. 57

FUNGI

PLATE 0

FIG. 1-9 INOCYBE CASTANEA PK.
CHESTNUT INOCYBE

FIG. 14-19 INOCYBE EXCORIATA PK.
EXCORIATED INOCYBE

FIG. 26-29 TRICHOLOMA SUBLUTEUM PK.
TWO COLORED TRICHOLOMA

FIG. 10-13 INOCYBE SQUAMOSODISCA PK.
SCALY DISKED INOCYBE

FIG. 20-25 INOCYBE FALLAX PK.
FALLACIOUS INOCYBE

FIG. 30-34 STEREUM BURTIANUM PK.
BURT'S STEREUM

EDIBLE FUNGI

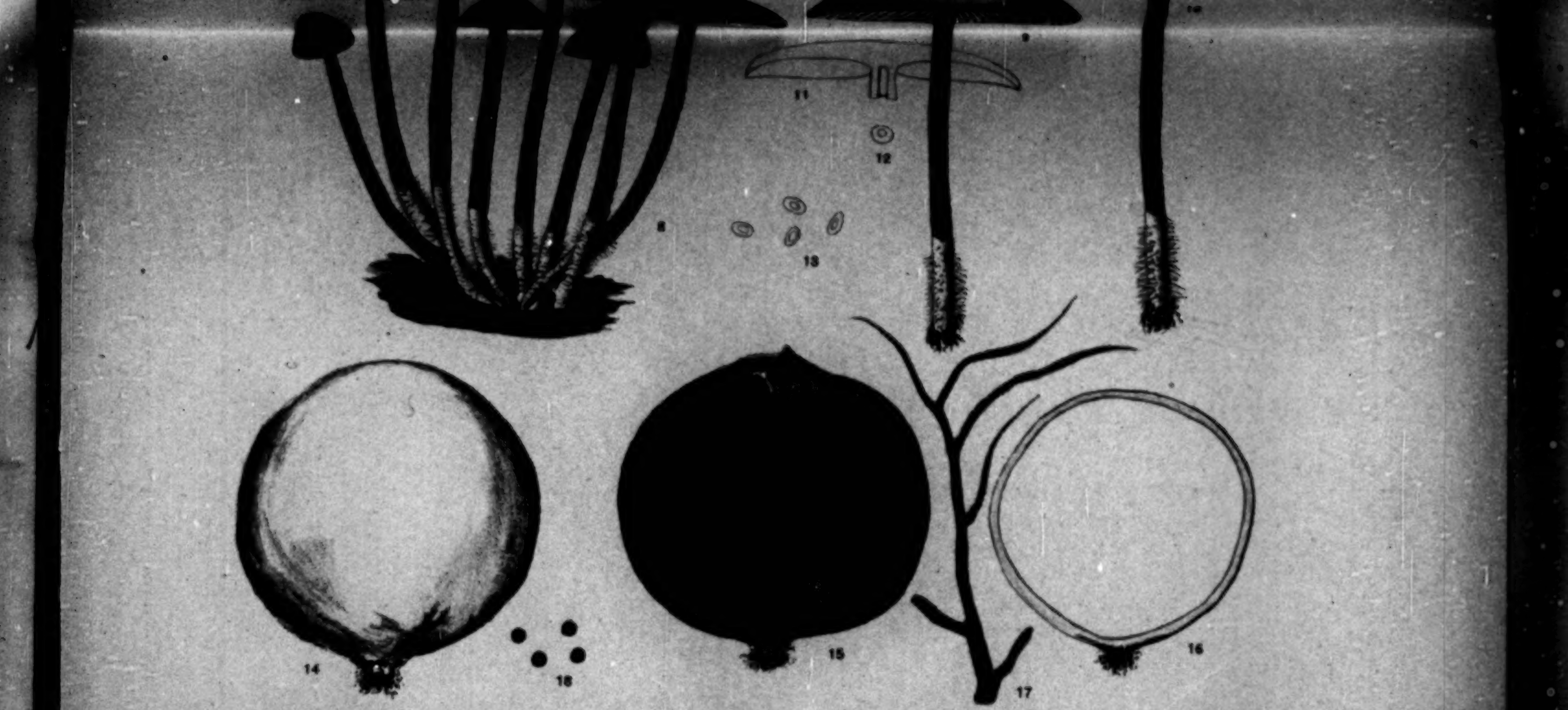

FIG. 1-7 COLLYBIA FAMILIA PK.
FAMILY COLLYBIA

FIG. 8-13 COLLYBIA ACERVATA FR.
TUFTED COLLYBIA

FIG. 14-18 BOVISTA PILA B & C.
ROUND BOVISTA

EDIBLE FUNGI

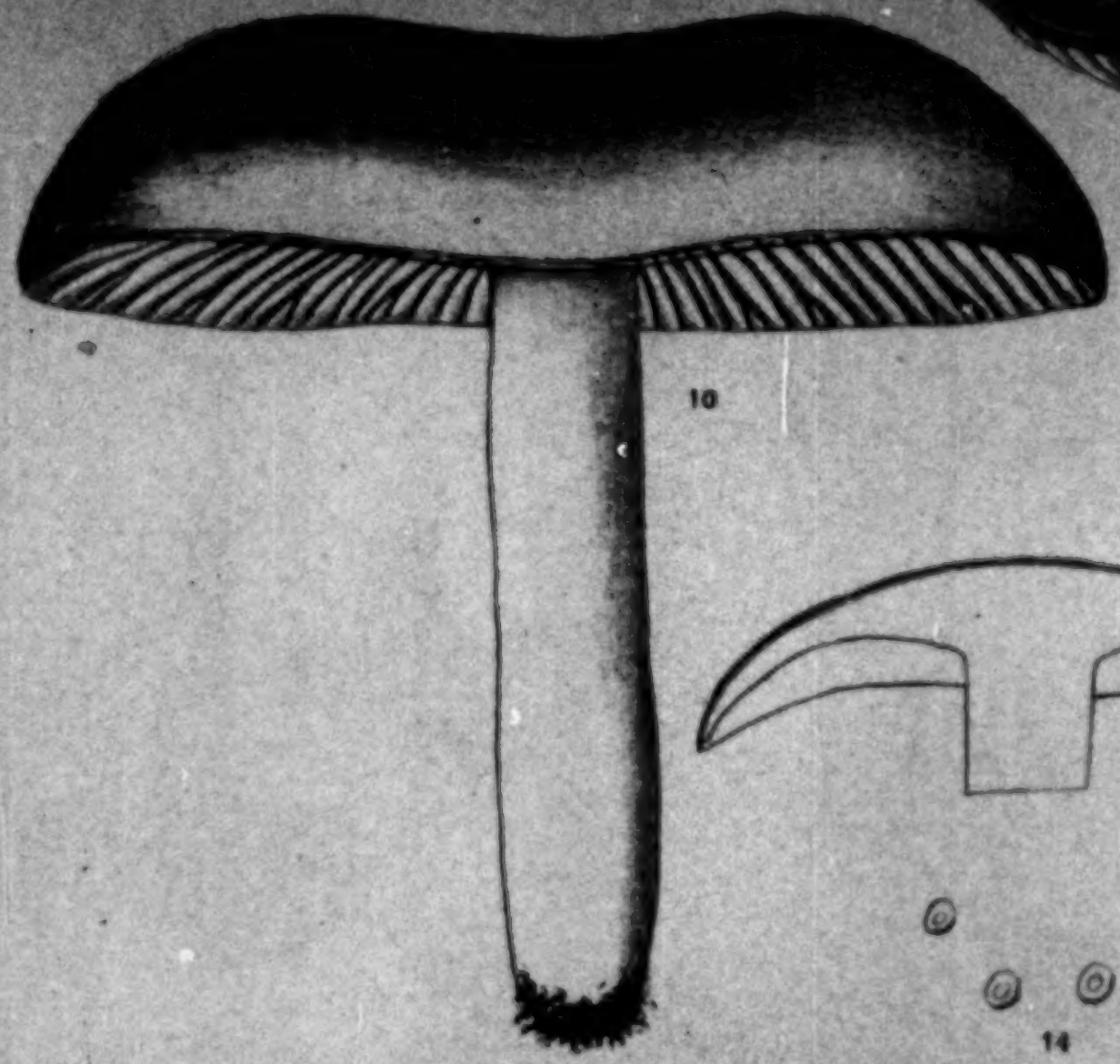

FIG. 1-8 · RUSSULA MARIAE PK.
MARY'S RUSSULA

FIG. 9-14 RUSSULA FURCATA (PERS.) FR.
FORKED RUSSULA

EDIBLE FUNGI

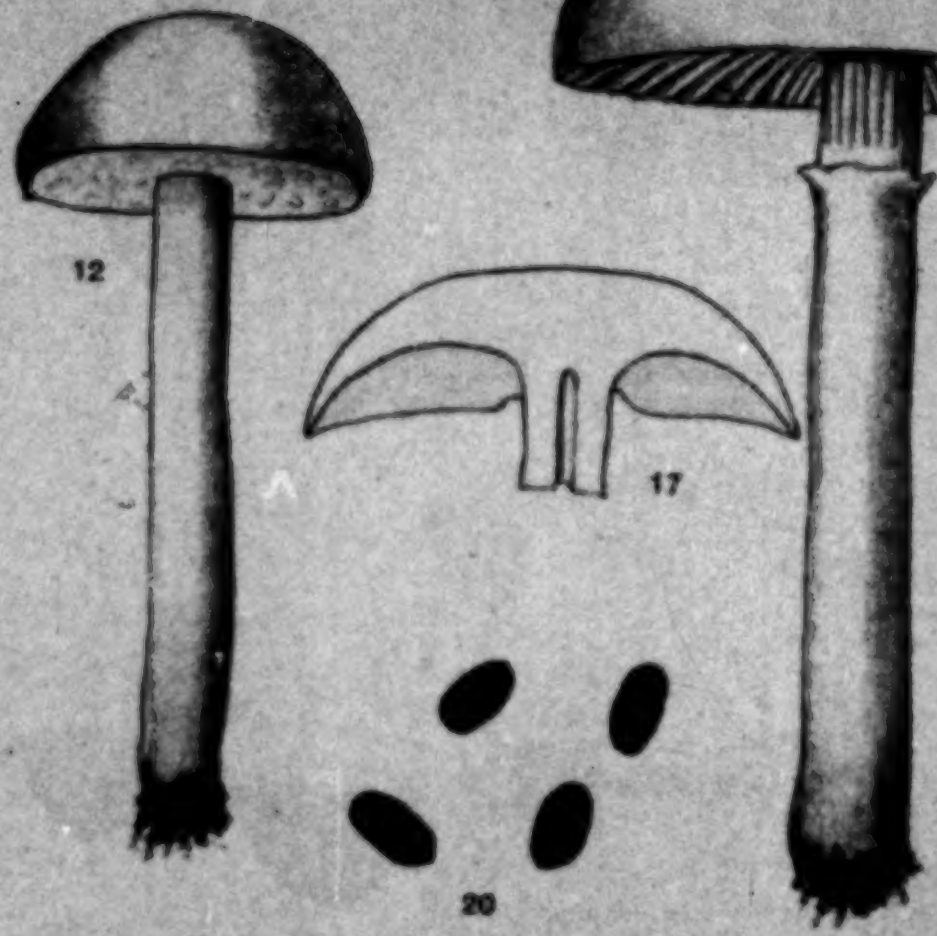

FIG. 1-11 PSILOCYBE FOENISECII (PERS.) FR.
HAY MAKER'S PSILOCYBE

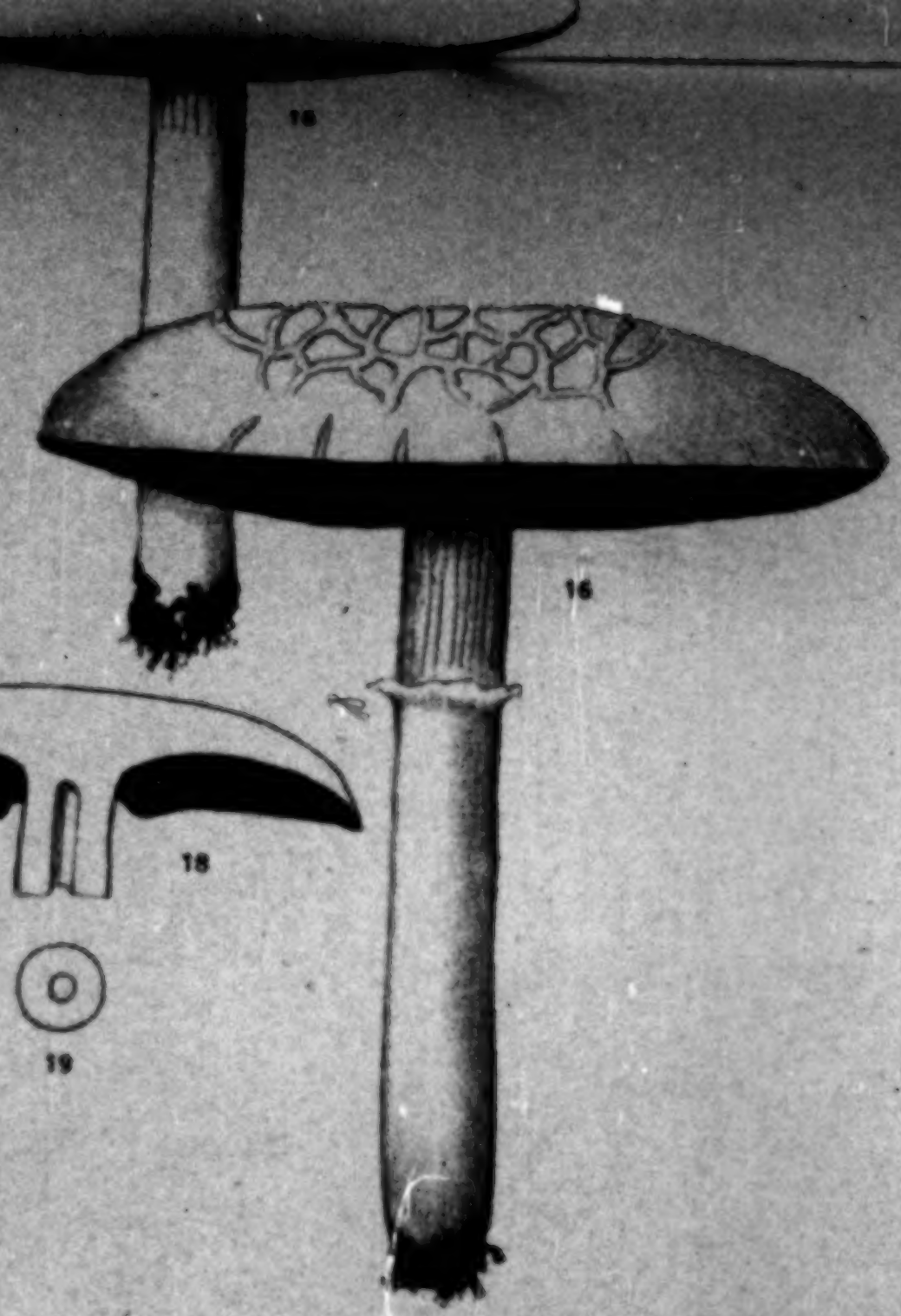

FIG. 12-20 PHOLIOTA VERMIFLUA PK.
WORMY PHOLIOTA

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New York State Education Department 1904

New York State Museum

JOHN M. CLARKE Director
CHARLES H. PECK State Botanist

Bulletin 94

BOTANY 8

REPORT OF THE STATE BOTANIST 1904

Specimens of plants for the state herbarium have been collected in the counties of Albany, Columbia, Essex, Fulton, Genesee, Hamilton, Lewis, Livingston, Madison, Monroe, Otsego, Rensselaer, Saratoga, Schenectady, Suffolk, Tompkins, Warren and Wyoming.

Specimens have been contributed that were collected in the counties of Albany, Cattaraugus, Chautauqua, Dutchess, Essex, Greene, Hamilton, Herkimer, Monroe, Oneida, Onondaga, Ontario, Orleans, Richmond, Saratoga, Suffolk, Tioga, Tompkins and Washington.

The number of species of which specimens have been added to the herbarium is 321. Of these, 72 were not previously represented in it and the remaining 249 are now better or more completely represented. Of the 72 species, 9 are considered new or previously undescribed species. These are all fungi. Descriptions of them will be given in the following pages. The names of the species of which specimens have been added to the herbarium are given under the title "Plants added to the herbarium."

The names of those who have contributed specimens and the names of the species represented by their respective contributions are given under the title "Contributors and their contributions." Many of the contributed specimens belong to extralimital species. Some of the specimens of mosses and hepatics contributed by Prof. John Macoun, botanist of the Geological and Natural History Survey of Canada, represent species found in the extreme western and northwestern part of British America. In some cases, specimens sent for identification have been in good condition and desirable for the herbarium. These have been preserved and credited to the sender as a contribution. The number of contributors is 54.

In a third chapter, under the heading "Species not before reported," are the names of species new to our flora. This contains the names of a few species that had previously been recorded and were represented in the herbarium as varieties of other species, but they have now been raised to specific rank and are herein recorded as good species. Remarks concerning habitats, descriptions of new species, and the time of collecting the specimens, are given under their respective species. The number of species recorded is 80. Of these 35 belong to the genus Crataegus.

In a fourth chapter, bearing the title "Remarks and observations," there is a record of new stations of rare plants, descriptions of new varieties, remarks concerning peculiar or distinguishing features of certain plants and new names given to some species as required by the law of priority.

The number of identifications of species made for correspondents and others, who have sent or brought specimens of plants to the office of the botanist for this purpose, is 675. The number of persons for whom identifications have been made is 100.

The number of species of mushrooms that have been tried and approved as edible is 8. Descriptions of these and of a new variety of a species previously found to be edible constitute a chapter entitled "Edible fungi." Colored figures of natural size have been prepared of all these and placed on 7 plates, octavo size. The number of New York species and varieties of edible mushrooms previously reported is 153.

Colored figures of 5 new species are given on 3 similar plates. The study of our Crataegus flora has been continued, and many specimens of trees and shrubs of this genus have been collected. The specific identity of many of these has not yet been determined. Rochester and its vicinity have furnished plants from which 31 species of Crataegus have been described by Prof. C. S. Sargent. Many of these were found within the limits of the city parks. By the wise and careful forethought of Mr C. C. Laney, superintendent of parks, labels have been placed on the particular thorn trees and shrubs which furnished the material from which the descriptions of the several new species were derived. Type trees, in a genus in which many species resemble each other as closely as they do in the genus Crataegus, possess a peculiar value and importance and it is very fortunate in this instance, where so many type trees and shrubs grow in such close proximity to each other and where they can be protected, that they have been properly labeled with their botanical names. It reduces very much any danger of mistakes in their identification.

In order to collect typical flowering specimens of as many of these species as possible, this prolific locality was visited in the flowering time of these plants and specimens were collected. It was again visited in autumn and a corresponding set of fruiting specimens was collected, so that now most of the Rochester species are well and, we believe, correctly represented in the state herbarium. These specimens will serve as a standard with which to compare specimens of closely related species collected in other localities. They exhibit the specific characters in some respects with greater precision than the words of descriptions can do.

It has been observed that there is some variability in the fruit of some species even on the same shrub. The fruit on a certain shrub of Crataegus delucida in 1903 was small, irregular and "wormy." The present year it was noticeably larger, fair and sound. The fruit of the Graves thorn, C. gravesii, which is produced by a clump of bushes near North Albany, is variegated when mature and ripening, dull red and green colors being intermingled. Three years in succession this clump has borne fruit of this character. Its failure to ripen its fruit evenly is due to the attacks of a parasitic fungus related to, if not the same species as, the one that causes apple scab on apples. A clump of bushes of the same species growing in Tivoli hollow bears fruit that is fair and uniformly colored when ripe. It appears to be exempt from the attacks of the fungus. The fruit on some plants has been more persistent this year than it was last year. This is perhaps largely due to the absence of many of the insects that usually prey on thorn apples. It is probably also due in part to favorable weather conditions. A plentiful supply of moisture has enabled the plants to maintain their growth and vigor late in the season. The more vigorous the plant the stronger its tendency to hold its foliage and fruit. In some species the fruit regularly persists long after the leaves have fallen.

The tendency of numerous species to crowd together in certain localities is a noticeable character in these plants. It is not uncommon to find two and three species growing close to each other and intermingling their branches so intimately as to appear at first sight to be a single intricately branched individual. If specimens for the herbarium are taken from such a clump great confusion and perplexity is likely to result unless the greatest care is taken not to mingle samples from different species. But association on a larger scale excites our wonder. That there should be 41 species of Crataegus growing spontaneously in the parks of the city of Rochester and in its immediate vicinity is a remarkable fact. On

Crown Point promontory, within an area of scarcely 50 acres, 13 species have been recognized, and in a certain locality within the limits of Albany on an area of scarcely 2 acres there are 15 species of Crataegus. Certain peculiarities of these groupings of species are not devoid of interest. In the Rochester locality the section Pruinosae is represented by 8 species, though C. pruinosa, the pruinose thorn itself is absent. The section Tenuifoliae is represented there by 11 species, but in the Crown Point locality this section has no representative and the section Pruinosae has but one and that is the pruinose thorn, the very one which is absent from Rochester. Only 5 species are common to the two localities, and these are species known to have a wide distribution. The two most abundant species at Crown Point are the cockspur thorn, C. crus-galli, and the round leaved thorn, C. coccinea rotundifolia. These two species apparently constitute fully one half of all the thorn growth of the locality. Several of the other species are represented by only a few individuals each. The dotted fruited thorn, C. punctata, is one of these scantily represented species. It is a species of wide range and probably occurs in more localities in our State than any other species. If any place has but one species of thorn it is most likely to be the dotted fruited thorn. If there are but two or three species this is likely to be the most abundant one. About Albany it and the cockspur thorn are common and nearly equal in abundance. Its slight representation in the Crown Point locality is therefore somewhat strange.

The botanical department contributed specimens of 16 species of edible mushrooms to the St Louis Exposition and, through the Forestry Commission, photographs and other representations of 80 species of trees.

Mr Stewart H. Burnham was employed as temporary assistant from July 1 to Sep. 21. He has made a rearrangement of the books and pamphlets of the library, and of the duplicate and extralimital specimens of the herbarium, has put typewritten labels on the shelves of the library and of the herbarium in order to facilitate reference to books and to specimens, and has prepared typewritten labels for a series of several hundred species of fungi that are kept in pasteboard boxes, placed these labels on the boxes and arranged them alphabetically. He has also assisted in the correspondence of the office and in disinfecting specimens. By his employment it was possible to keep the office open in the absence of the botanist while engaged in field work.

PLANTS ADDED TO THE HERBARIUM

New to the herbarium

Amanita crenulata *Pk.*
A. lignophila *Atk.*
A. radicata *Pk.*
Arenaria leptoclados *Guss.*
Arisaema stewardsoni *Britton*
Boletus atkinsoni *Pk.*
B. laricinus *Berk.*
B. nobilis *Pk.*
B. rugosiceps *Pk.*
Botrychium tenebrosum *A. A. Eaton*
Bryum pendulum *Schp.*
Clavaria botrytoides *Pk.*
C. xanthosperma *Pk.*
Collybia amabilipes *Pk.*
Convolvulus repens *L.*
Cortinarius heliotropicus *Pk.*
Crataegus acclivis *Sarg.*
C. baxteri *Sarg.*
C. beata *Sarg.*
C. beckwithae *Sarg.*
C. benigna *Sarg.*
C. colorata *Sarg.*
C. compta *Sarg.*
C. cupulifera *Sarg.*
C. deweyana *Sarg.*
C. diffusa *Sarg.*
C. dunbari *Sarg.*
C. durobrivensis *Sarg.*
C. ellwangeriana *Sarg.*
C. ferentaria *Sarg.*
C. formosa *Sarg.*
C. fulleriana *Sarg.*
C. gemmosa *Sarg.*
C. glaucophylla *Sarg.*
C. hudsonica *Sarg.*
C. laneyi *Sarg.*
Crataegus leiophylla *Sarg.*
C. lennoniana *Sarg.*
C. macauleyae *Sarg.*
C. maineana *Sarg.*
C. opulens *Sarg.*
C. ornata *Sarg.*
C. parviflora *Sarg.*
C. pedicellata *Sarg.*
C. persimilis *Sarg.*
C. rubicunda *Sarg.*
C. spissiflora *Sarg.*
C. streeterae *Sarg.*
C. tenuiloba *Sarg.*
C. verecunda *Sarg.*
Craterellus taxophilus *Thom*
Dipsacus laciniatus *L.*
Eocronartium typhuloides *Atk.*
Falcata pitcheri (*T. & G.*) *Kuntze*
Fusarium aquaeductuum *R. & R.*
Galera capillaripes *Pk.*
Gyrostachys ochroleuca *Rydb.*
Hypholoma rugocephalum *Atk.*
Hypomyces banningiae *Pk.*
H. inaequalis *Pk.*
Lachnocladium semivestitum *B. & C.*
Lactarius brevis *Pk.*
L. colorascens *Pk.*
Pholiota appendiculata *Pk.*
Salix serissima (*Bail.*) *Fern.*
Sisyrinchium arenicola *Bickn.*
Stachys sieboldi *Miq.*
Teucrium boreale *Bickn.*
Viola amoena *Le Conte*
V. latiuscula *Greene*
V. septentrionalis *Greene*
Zygodesmus granulosus *Pk.*

Not new to the herbarium

Actaea rubra (*Ait.*) *Willd.*
Agaricus abruptibulbus *Pk.*
A. campester *L.*
A. subrufescens *Pk.*
Allium tricoccum *Ait.*
Alsine borealis (*Bigel.*) *Britton*
Amanita caesarea *Scop.*
A. muscaria *L.*
Amanitopsis volvata (*Pk.*) *Sacc.*
Amanitopsis vaginata (*Bull.*) *Roze*
Antennaria ambigens (*Greene*) *Fern.*
A. canadensis *Greene*
A. fallax *Greene*
A. neglecta *Greene*
A. petaloidea *Fern.*
A. plantaginea *R. Br.*
Anthemis cotula *L.*
Aquilegia vulgaris *L.*

Arenaria serpyllifolia *L.*
Arisaema triphyllum (*L.*) *Torr.*
Aristolochia clematitis *L.*
Artemisia stelleriana *Bess.*
Asplenium angustifolium *Mx.*
Asterodon ferruginosum *Pat.*
Bactridium ellisii *Berk.*
Bartonia virginica (*L.*) *B. S. P.*
Bidens frondosa *L.*
Blephariglottis ciliaris (*L.*) *Rydb.*
B. grandiflora (*Bigel.*)
Blephilia hirsuta (*Pursh*) *Torr.*
Blitum capitatum *L.*
Botrychium dissectum *Spreng.*
B. obliquum *Muhl.*
B. obliquum elongatum *G. & H.*
B. obliquum habereri *Gilb.*
B. obliquum oneidense *Clute*
B. simplex *Hitch.*
Boletinus grisellus *Pk.*
B. porosus (*Berk.*) *Pk.*
Boletus clintonianus *Pk.*
B. cyanescens *Bull.*
B. eximius *Pk.*
B. felleus *Bull.*
B. frostii *Russell*
B. illudens *Pk.*
B. nebulosus *Pk.*
B. rubropunctus *Pk.*
Bovista plumbea *Pers.*
Brassenia purpurea (*Mx.*) *Casp.*
Brassica arvensis (*L.*) *B. S. P.*
B. rapa *L.*
Callitriche heterophylla *Pursh*
Cantharellus cinnabarinus *Schw.*
C. floccosus *Schw.*
Carex castanea *Wahl.*
C. comosa *Boott*
C. crawei *Dew.*
C. formosa *Dew.*
C. hitchcockiana *Dew.*
C. lur. exundans *Bail.*
C. setifolia (*Dew.*) *Britton*
Cercospora circumscissa *Sacc.*
Chamaedaphne calyculata (*L.*)
Clavaria botrytes *Pers.*
C. cristata *Pers.*
C. platyclada *Pk.*
Claytonia caroliniana *Mx.*
Clitocybe albissima *Pk.*
C. candicans *Pers.*
C. centralis *Pk.*
C. clavipes *Pers.*
C. cyathiformis *Fr.*
C. eccentrica *Pk.*
C. ochropurpurea *Berk.*
Collybia nigrodisca *Pk.*
Convolvulus spithamaeus *L.*
Coprinus micaceus *L.*
Cornus canadensis *L.*
Cortinarius cinnamomeus *Fr.*
Crataegus holmesiana *Ashe*
C. macracantha *Lodd.*
C. pringlei *Sarg.*
C. tatnalliana *Sarg.*
C. succulenta *Lk.*
C. tomentosa *L.*
Cudonia circinans (*Pers.*) *Fr.*
C. lutea (*Pk.*) *Sacc.*
Cudoniella marcida (*Mull.*) *Sacc.*
Daedalea unicolor (*Bull.*) *Fr.*
Daphne mezereum *L.*
Dianthera americana *L.*
Diplodia conigena *Desm.*
Discina orbicularis *Pk.*
Eatonia pennsylvanica (*DC.*)
Eleocharis acicularis (*L.*) *R. & S.*
E. acuminata (*Mx.*) *Nees*
E. pal. vigens *Bail.*
E. pal. glaucescens (*Willd.*)
Eragrostis eragrostis (*L.*) *Karst.*
Eriophorum alpinum *L.*
Erythronium americanum *Ker*
Eurotium herbariorum (*Wigg.*) *Lk.*
Fagopyrum tataricum (*L.*) *Gaertn.*
Filix bulbifera (*L.*) *Underw.*
Fistulina hepatica *Fr.*
Fragaria americana (*Porter*) *Britton*
F. vesca *L.*
Fraxinus nigra *Marsh.*
Geoglossum ophioglossoides (*L.*)
G. velutipes *Pk.*
Geum canadense *Jacq.*
Gratiola aurea *Muhl.*
Gyalecta pineti (*Schrad.*) *Tuckm.*
Gyrostachys cernua (*L.*) *Kuntze*
G. stricta *Rydb.*
G. plantaginea (*Raf.*)

Helvella infula *Schaeff.*
Hieracium praealtum *Vill.*
Hudsonia tomentosa *Nutt.*
Hydnum adustum *Schw.*
H. fennicum *Karst.*
H. imbricatum *L.*
H. vellereum *Pk.*
H. zonatum *Batsch*
Hydrangea arborescens *L.*
Hygrophorus flavodiscus *Frost*
H. fuliginosus *Frost*
H. immutabilis *Pk.*
H. lau. decipiens *Pk.*
H. pratensis (*Pers.*) *Fr.*
Hypholoma incertum *Pk.*
H. sublateritium *Schaeff.*
Ilex verticillata (*L.*) *Gray*
Iris versicolor *L.*
Juncus acuminatus *Mx.*
J. balticus *Willd.*
J. brachycephalus (*Engelm.*)
J. marginatus *Rostk.*
Juniperus nanus *Willd.*
Lactarius alpinus *Pk.*
L. volemus *Fr.*
Larix laricinus (*DuRoy*) *Koch*
Lathyrus myrtifolius *Muhl.*
Lentinus lepideus *Fr.*
L. suavissimus *Fr.*
Lenzites sepiaria *Fr.*
Lepiota cepaestipes *Sow.*
Leptoglossum luteum (*Pk.*) *Sacc.*
Leptorchis loeselii (*L.*) *MacB.*
Lilium superbum *L.*
Limnorchis dil. linearifolia *Rydb.*
Lithospermum officinale *L.*
Lobelia cardinalis *L.*
Lychnis alba *Mill.*
L. chalcedonica *L.*
Lycium vulgare (*Ait.*) *Dunal*
Malus coronaria (*L.*) *Mill.*
Marasmius res. candidissimus *Pk.*
M. oreades *Fr.*
Mentha canadensis *L.*
Mikania scandens *Willd.*
Morchella bispora *Sor.*
M. deliciosa *Fr.*
Myriophyllum verticillatum *L.*
Naias flexilis (*Willd.*) *R. & S.*
Naumbergia thyrsiflora (*L.*)
Omphalia austinii *Pk.*
Onagra oakesiana (*Gr.*) *Britton*
Osmunda claytoniana *L.*
Oxalis corniculata *L.*
O. cymosa *Small*
Panax quinquefolium *L.*
Panicum lanuginosum *Ell.*
Peramium pubescens (*Willd.*)
Phacelia dubia (*L.*) *Small*
Phlox subulata *L.*
Pholiota adiposa *Fr.*
P. togularis (*Bull.*) *Fr.*
Phytophthora infestans (*Mont.*)
Picea canadensis (*Mill.*)
P. mariana (*Mill.*) *B. S. P.*
Pleurotus ostreatus (*Jacq.*) *Fr.*
P. ulmarius *Fr.*
Pluteus cervinus (*Schaeff.*) *Fr.*
Polygonum lapathifolium *L.*
Polystictus pergamenus *Fr.*
P. pseudopergamenus *Thum.*
Potamogeton natans *L.*
Potentilla argentea *L.*
Protomyces erythronii *Pk.*
Prunus americana *Marsh.*
P. cuneata *Raf.*
P. nigra *Ait.*
P. pennsylvanica *L.*
Pterospora andromedea *Nutt.*
Quercus acuminata (*Mx.*)
Q. nana (*Marsh.*) *Sarg.*
Q. prinos *L.*
Ranunculus hispidus *Mx.*
Rhamnus cathartica *L.*
Rosa sayi *Schw.*
R. setigera *Mx.*
Rubus canadensis *L.*
R. nigrobaccus *Bail.*
R. odoratus *L.*
Rudbeckia hirta *L.*
R. laciniata *L.*
Rumex acetosa *L.*
Russula compacta *Frost*
R. earlei *Pk.*
R. flavida *Frost*
R. lepida *Fr.*
R. magnifica *Pk.*
R. mariae *Pk.*
R. virescens (*Schaeff.*)

Rynchospora alba (*L.*) *Vahl*
Salix amygdaloides *Anders.*
S. pet. gracilis *Anders.*
Sarracenia purpurea *L.*
Scirpus occidentalis (*Wats.*)
S. pedicellatus *Fern.*
Scrophularia marylandica *L.*
Selaginella apus *Spring*
Silene antirrhina *L.*
S. vulgaris (*Moench*)
Sisymbrium altissimum *L.*
Sisyrinchium angustifolium *Mill.*
Smilax hispida *Muhl.*
Solidago uniligulata (*D C.*) *Porter*
Specularia perfoliata (*L.*) *D C.*
Stachys aspera *Mx.*
S. palustris *L.*
Stereum complicatum *Fr.*
S. spadiceum *Fr.*
Scleroderma vulgare *Hornem.*
Teucrium boreale *Britton*
Thymus serpyllum *L.*
Tricholoma personatum *Fr.*
Urnula craterium (*Schw.*) *Fr.*
Vagnera stellata (*L.*) *Morong*
Veronica byzantina (*S. & S.*)
Viburnum dentatum *L.*
V. lentago *L.*
V. opulus *L.*
Viola blanda *Willd.*
V. palm. dilatata *Ell.*
V. pap. domestica (*Bickn.*)
V. pubescens *Ait.*
V. rotundifolia *Mx.*
V. scabriuscula (*T. & G.*) *Schw.*
V. sororia *Willd.*
Xyris montana *Ries*
Zygadenus elegans *Pursh*

CONTRIBUTORS AND THEIR CONTRIBUTIONS

Mrs E. B. Blackford, Boston Mass
Amanita radicata *Pk.*

Mrs F. B. M. Cholwell, Old Forge
Amanita phalloides *Fr.*

Miss J. F. Conant, Melrose Mass
Hygrophorus pallidus *Pk.*

Mrs G. M. Dallas, Philadelphia Pa.
Eryngium virginianum *Lam.* | Geopyxis nebulosa (*Cke.*) *Sacc.*

Mrs C. F. Davis, Falmouth Me.
Clitocybe clavipes (*Pers.*) *Fr.*

Mrs M. S. De Coster, Little Falls
Daphne mezereum *L.*

Miss H. A. Edwards, Port Henry
Pterospora andromedea *Nutt.*

Miss R. C. Fish, Norwich Ct.
Clitopilus tarduus *Pk.*

Mrs L. L. Goodrich, Syracuse
Phacelia dubia (*L.*) *Small*

Miss C. C. Haynes, Highlands N. J.

Barrania triloba (*L.*) *S. F. Gray*
Blepharostoma trichophyllum (*L.*) *Dumort.*
Cephalozia curvifolia (*Dicks.*) *Dumort.*
C. lunulaefolia *Dumort.*
Cololejeunea biddlecomiae (*Aust.*) *Evans*
Conocephalum conicum *Dumort.*
Frullania asagrayana *Mort.*
F. eboracensis *Gottsche*
Jamesoniella autumnalis (*D C.*) *Steph.*
Lepidozia reptans (*L.*) *Dumort.*
Lophozia barbata (*Schreb.*)
L. incisa (*Schrad.*)
Plagiochila asplenioides (*L.*) *Dumort.*
Porella platyphylla (*L.*) *Lindb.*
Ptilidium ciliare (*L.*) *Nees*
Radula complanata (*L.*) *Dumort.*
Scapania nemorosa (*L.*) *Dumort.*
S. undulata (*L.*) *Dumort.*
Sphenobolus exsectus (*Schm.*)
Trichocolea tomentella (*Ehrh.*)

Mrs M. A. Knickerbocker, San Francisco Cal.

Berberis pinnata *Lag.*
Chrysoma ericoides (*Less.*) *Greene*
Croton californicus *Muell.*
Garrya elliptica *Doug.*
Heteromeles arbutifolia *Roem.*
Pseudotsuga mucronata (*Raf.*)
Rhus integrifolia *B. & H.*
Ribes sanguineum *Pursh*
Sequoia sempervirens *Endl.*
Vaccinium ovatum *Pursh*

Miss J. A. Moses, Jamestown

Viola rotundifolia *Mx.*

Miss C. S. Parsons, Albany

Rudbeckia hirta *L.*

Mrs J. M. Peters, Pleasant Valley

Hypholoma sublateritium (*Schaeff.*) *Fr.*

Miss T. L. Smith, Worcester Mass.

Cantharellus brevipes *Pk.*
Clitocybe decora *Fr.*
Hexagona micropora *Murrill*
Hydnum adustum *Schw.*
H. vellereum *Pk.*
Hypocrea pallida *E. & E.*
Lepiota amianthina *Scop.*
Pleurotus porrigens (*Pers.*) *Fr.*
Polyporus pubescens *Schum.*
P. varius *Fr.*

Miss M. S. Whetstone, Minneapolis Minn.

Pluteus umbrosus *Pers.*

J. C. Arthur, Lafayette Ind.

Puccinia brickelliae *Pk.*
P. malvacearum *Mont.*
Puccinia simillima *Arth.*
P. viguierae *Pk.*

G. F. Atkinson, Ithaca

Amanita caesarea *Scop.*
A. lignophila *Atk.*
A. mappa *Fr.*
Clitocybe asperulospora *Atk.*
Collybia amabilipes *Pk.*
Coprinus ebulbosus *Pk.*
Eocronartium typhuloides *Atk.*
Hydnum imbricatum *L.*
Hypholoma rugocephalum *Atk.*
Lachnocladium semivestitum *B.&C.*
Lactarius colorascens *Pk.*
Pholiota adiposa *Fr.*
Russula sordida *Pk.*
Tricholoma sulphureum (*Bull.*)
Uredinopsis atkinsonii *Magn.*
U. osmundae *Magn.*

A. M. Baker, Irondequoit

Geaster triplex *Jungh.*

H. J. Banker, California Pa.

Physalacria inflata (*Schw.*) *Pk.*
Scorias spongiosa (*Schw.*) *Fr.*

E. Bartholomew, Rockport Kan.

Uromyces gaurinus (*Pk.*) *Long*
Uromyces oenotherae *Burrill*

F. S. Boughton, Pittsford

Hyphomyces banningiae *Pk.*

F. J. Braendle, Washington D. C.

Cortinarius braendlei *Pk.*
Phallus imperialis *Schulz.*
Thelephora palmata *Scop.*
Torrubia militaris (*L.*) *Lk.*

E. Brainerd, Middlebury Vt.

Viola cucullata *Ait.*
V. latiuscula *Greene*
V. obliqua *Hill*
Viola palmata dilatata *Ell.*
V. septentrionalis *Greene*
V. sororia *Willd.*

S. H. Burnham, Vaughns

Aronia atropurpurea *Britton*
Aster lat. thyrsoidea (*Gr.*) *Sheldon*
Bidens frondosa *L.*
Favolus europaeus *Fr.*
Gyrostachya ochroleuca *Rydb.*
Hebeloma illicitum *Pk.*
Hieracium marianum *Willd.*
Hypomyces lactifluorum *Schw.*
Monarda punctata *L.*
Nabalus altissimus (*L.*) *Hook.*
Polyporus elegans *Fr.*
P. pallidus *S. & K.*
Rhus glab. borealis *Britton*
Rosa sayi *Schw.*
Salix pet. gracilis *Anders.*
Sisyrinchium arenicola *Bickn.*
Stachys sieboldi *Miq.*
Steironema lanceolatum (*Walt.*)
Thymus serpyllum *L.*
Trametes rubescens *Fr.*
Tremella fuciformis *Berk.*
Tricholoma personatum *Fr.*
Urnula craterium (*Schw.*) *Fr.*
Vicia angustifolia *Roth*

G. D. Cornell, Cooper's Plains

Panax quinquefolium *L.*

S. Davis, Boston Mass.

Agaricus comtulus *Fr.*
Clitocybe brumalis *Fr.*
Hypholoma incertum *Pk.*
Pholiota togularis (*Bull.*) *Fr.*
Tricholoma pallidum *Pk.*
T. terr. fragrans *Pk.*

F. Dobbin, Shushan

Convolvulus repens *L.*
C. spithamaeus *L.*
Stemonitis fusca *Roth*

C. E. Fairman Lyndonville

Armillaria nardosmia *Ellis*
Clitocybe eccentrica *Pk.*
Hydnum spongiosipes *Pk.*
Russula crustosa *Pk.*

F. E. Fenno, Nichols

Crataegus tomentosa *L.*
Juncus acuminatus *Mx.*
J. balticus *Willd.*
J. brachycephalus (*Engelm.*)
J. marginatus *Rostk.*
Lobelia kalmii *L.*
Panicum xanthophysum *Gray*
Parnassia caroliniana *Mx.*
Polygala viridescens *L.*
Polygonum lapathifolium *L.*
Roripa sylvestris (*L.*) *Bess.*
Rosa setigera *Mx.*
Rynchospora alba (*L.*) *Vahl.*
R. capillacea *Torr.*
Scirpus pedicellatus *Fern.*
Silene vulgaris (*Moench*) *Garcke*
Smilax hispida *Muhl.*
Solidago uniligulata (*D C.*)*Porter*

G. B. Fessenden, Boston Mass.

Lactarius regalis *Pk.*

B. D. Gilbert, Clayville

Bryum pendulum *Schp.*
Camptothecium nitens *Schp.*

N. M. Glatfelter, St Louis Mo.

Gyromitra brunnea *Underw.*
Panus meruliiceps *Pk.*

C. C. Hanmer, East Hartford Ct.

Guepinia spathularia *Schw.*

J. V. Haberer, Utica

Achroanthes monophylla (*L.*) *Greene*
A. unifolia (*Mx.*) *Raf.*
Adopogon carolinianum *Britton*
Alsine borealis (*Bigel.*) *Britton*
Arenaria leptoclados *Guss.*
A. serpyllifolia *L.*
Antennaria canadensis *Greene*
A. fallax *Greene*
A. neglecta *Greene*
A. parlinii *Fern.*
A. petaloides *Fern.*
A. plantaginea *B. Br.*
Artemisia stelleriana *Bess.*
Asclepias tuberosa *L.*
Bartonia virginica (*L.*) *B. S. P.*
Blephariglottis grandiflora (*Bigel.*)
Botrychium dissectum *Spreng.*
B. obliquum *Muhl.*
B. obliquum elongatum *G. & H.*
B obliquum habereri *Gilb.*
B. obliquum oneidense *Clute*
B. simplex *Hitch.*
B. tenebrosum *Eaton*
Callitriche heterophylla *Pursh*
Ceanothus americanus *L.*
Fragaria vesca *L.*
Galium mollugo *L.*
Geranium bicknellii *Britton*
Gyrostachys cernua (*L.*)
G. ochroleuca *Rydb.*
G. plantaginea (*Raf.*)
G. praecox (*Walt.*) *Kuntze*
G. stricta *Rydb.*
Lactuca virosa *L.*
Leptorchis loeselii (*L.*) *MacM.*
Limnorchis dil. linearifolia *Rydb.*
Lycopodium tristachyum *Pursh*
Lysimachia terrestris (*L.*) *B. S. P.*
Myriophyllum verticillatum *L.*
Naias flexilis (*Willd.*) *R. & S.*
Oxalis corniculata *L.*
Peramium pubescens (*Willd.*)
Polygonella articulata (*L.*)
Rhamnus cathartica *L.*
Rumex acetosa *L.*
Scrophularia marylandica *L.*
Selaginella apus *Spring*
Silene antirrhina *L.*
Sorbus aucuparia *L.*
Specularia perfoliata (*L.*) *D C.*
Stachys palustris *L.*
S. aspera *Mx.*
Teucrium boreale *Bickn.*
Valeriana uliginosa *Rydb.*
Verbascum lychnidis *L.*
Xyris montana *Ries*

W. Herriot, Galt Ont.

Carex lupuliformis *Sart.*
Leontodon hispidus *L.*
Linaria minor *Desf.*

H. H. Hindshaw, Albany

Anthoceros laevis *L.*
Bulgaria inquinans *Fr.*

E. A. Lehman, Winston-Salem N. C.

Merulius lacrymans (*Jacq.*) *Fr.*

R. B. Mackintosh, Peabody Mass.

Boletus parasiticus *Bull.*
B. rubropunctus *Pk.*
Hydnum fennicum *Karst.*
Hydnum vellereum *Pk.*
Lepiota rhacodes (*Vitt.*) *Fr.*

J. Macoun, Ottawa Can.

Amblystegium fluviatile *B. & S.*
A. subcompactum *C. M. & K.*
Andraea petrophila *Ehrh.*
Aneura latifrons *Lindb.*
A. pinguis *Dumort.*
Anthoceros laevis *L.*
Aulacomnion palustre (*L.*) *Schwaegr.*
A. palustre imbricatum *B. & S.*
A. palustre subimbricatum *Kindb.*
A. turgidum (*Wahl.*)
Barbula circinnatula *C. M. & K.*
B. convoluta *Hedw.*
Bazzania trilobata (*L.*) *S. F. Gray*
Biatora uliginosa (*Schrad.*) *Fr.*
Blepharostoma setiforme (*Ehrh.*)
B. trichophyllum (*L.*)
Brachythecium glareosum *Bruch*
B. salebrosum *B. & S.*
Bryum arcticum *B. & S.*
B. auromontanum *Kindb.*
B. caespiticium *L.*
B. capillare *L.*
B. cirrhatum *H. & H.*
B. cyclophyllum *B. & S.*
B. dawsoniense *Will.*
B. duvalii *Voit*
B. ery. gaspeanum *Kindb.*
B. haematophyllum *Kindb.*
B. intermedium *Brid.*
B. klondikense *Kindb.*
B. micans *Limpr.*
B. mucronigerum *Philib.*
Bryum pseudotriquetrum *Schwaegr.*
Calliergon cordifolium *Hedw.*
C. giganteum *Schp.*
C. stramineum *Dicks.*
C. subgiganteum *Kindb.*
Camptothecium nitens *Schreb.*
C. nitens microthecium *Kindb.*
Campylium stellatum *Schreb.*
Catascopium nigritum *Brid.*
Cephalozia bicuspidata (*L.*)
C. leucantha *Spruce*
C. media *Lindb.*
C. pleniceps (*Aust.*)
Ceratodon columbiae *Kindb.*
Chiloscyphus polyanthos *Cd.*
Climacium dendroides *W. & M.*
Corticium canadense *Burt*
C. calc. glebulosum *Fr.*
C. croceum (*Kunze*)
C. crustaceum *Karst.*
C. effuscatum *C. & E.*
C. galactinum (*Fr.*) *Burt*
C. greschikii *Bres.*
C. pinicolum *Tul.*
Cynodontium strumiferum *Ehrh.*
C. torquescens (*Bruch*)
C. wahlenbergii (*Brid.*)
Dicranella crispa *Schp.*
D. secunda (*Sw.*) *Lindb.*
Dicranum bergeri *Bland.*
D. bergeri brevifolium *Lindb.*
D. bergeri rupincola *Kindb.*
D. elongatum *Schwaegr.*

Dicranum elongatum attenuatum *Kindb.*
D. elongatum subfragilifolium *K.*
D. fragilifolium *Lindb.*
D. fuscescens *Turn.*
D. lioneuron *Kindb.*
D. muehlenbeckii *B. & S.*
D. schisti *Lindb.*
D. spadiceum *Zett*
D. sphagni *Wahl.*
D. subpalustre *C. M. & K.*
D. sulcatum *Kindb.*
Didymodon baden-powelli *Kindb.*
Diplophylleia albicans (*L.*) *Trev.*
D. taxifolia (*Wahl.*) *Trev.*
Distichum capillaceum *B. & S.*
Ditrichum flex. densum *Kindb.*
D. inclinatum *Ehrh.*
D. macouni *C. M. & K.*
D. pallidum *Hampe*
Eurhynchium edentulum *Kindb.*
E. strigosum (*Hoffm.*)
E. strigosum praecox *Hedw.*
E. strigosum robustum *Kindb.*
Fissidens grandifrons *Brid.*
F. osmundoides (*Sw.*)
Fontinalis hypnoides *Hartm.*
F. novae-angliae *Sulliv.*
F. squamosa *L.*
Fossombronia foveolata *Lindb.*
Frullania eboracensis *Gotts.*
Grandinia papillata *B. & C.*
Gymnomitrium coralloides *Nees*
Hymenochaete corrugata *Fr.*
Hypnum aduncum *L.*
H. amblyphyllum *Will.*
H. cupressiforme *L.*
H. exannulatum *Guemb.*
H. fluitans *L.*
H. kneiffia *B. & S.*
H. molluscoides *Kindb.*
H. plumiferum *Mitt.*
H. revolvens *Swartz*
H. rugosum *L.*
H. schreberi *Willd.*
H. subimponens *Lesq.*
H. uncinatum *Hedw.*
Isothecium myosuroides (*L.*) *Brid.*
Kantia trichomanes (*L.*) *S. F. Gray*
Lecanora elatina *Ach.*
L. elatina ochrophaea *Tuckm.*
L. pallescens (*L.*) *Schaer.*
Leptobryum pyriforme (*L.*) *Schp.*
Lophocolea foveolata *Lindb.*
L. minor *Nees*
Lophozia barbata (*Schreb.*)
L. floerkii (*W. & M.*)
L. inflata (*Huds.*)
L. kunzeana *Hueben.*
L. lyoni *Tayl.*
L. minuta *Crantz*
L. rutheana *Limpr.*
L. saxicola (*Schrad.*)
L. ventricosa (*Dicks.*)
Meesia albertini *B. & S.*
M. trichodes (*L.*) *Spruce*
M. uliginosa *Hedw.*
Merulius bellus *B. & C.*
Mnium blyttii *B. & S.*
M. hymenophyllum *Bry. Eur.*
M. macouni *Kindb.*
M. macrophyllum *Kindb.*
M. medium *B. & S.*
M. pseudolycopodioides *C. M. & K.*
M. rugicum *Laur.*
M. subglobosum *B. & S.*
Myurella apiculata *B. & S.*
M. julacea *B. & S.*
Odontoschisma macouni *Aust.*
Orthotrichum anomalum *Hedw.*
O. porteri *Aust.*
O. schimperi *Hamm.*
Pallavicinia lyellii (*Hook.*)
Paludella squarrosa (*L.*) *Brid.*
Peniophora cinerea (*Fr.*)
Phascum cuspidatum *Schreb.*
Philonotis aciculare-pungens *C. M. & K.*
P. alpicola *Jurat.*
P. font. microthamniae *Kindb.*
P. trichophorum (*Spruce*)
Polytrichum hyperboreum *R. Br.*
P. juniperinum *Willd.*
P. juniperinum alpinum *Kindb.*
P. piliferum *Schreb.*

Polytrichum strictum *Banks*
Porella pinnata *L.*
Pseudoleskea malacoclada *C. M. & K.*
Psilopilum glabratum *Lindb.*
Ptilidium ciliare (*L.*) *Nees*
Saxicola lophozioides *Evans*
Scouleria muelleri *Kindb.*
Sebacina calcea (*Pers.*) *Bres.*
Sphagnum acutifolium *R. & W.*
Sphagnum girgensohni *Russ.*
S. medium *Limpr.*
Stereum sulcatum *Burt*
S. tuberculosum *Fr.*
Thuidium abietinum *B. & S.*
Thuidium philiberti *Limpr.*
Webera albicans *Schp.*
W. annotinum *Schwaegr.*
W. cruda *Schp.*
W nutans *Hedw.*

C. McIlvaine, Cambridge Md.

Lentinus vulpinus *Fr.*
Simblum rubescens *Ger.*

F. H. Mickleborough, Brooklyn

Hypomyces inaequalis *Pk.*

G. E. Morris, Waltham Mass.

Agaricus micromegethus *Pk.*
Boletinus grisellus *Pk.*
Cortinarius merrisii *Pk.*
Hydnum adustum *Schw.*

C. H. Prescott, Albany

Boletus clintonianus *Pk.*
Boletus laricinus *Berk.*

C. S. Sargent, Jamaica Plain Mass.

Crataegus acclivis *Sarg.*
C. baxteri *Sarg.*
C. beata *Sarg.*
C benigna *Sarg.*
C colorata *Sarg.*
C. compta *Sarg.*
C. conjuncta *Sarg.*
C. cupulifera *Sarg.*
C. deweyana *Sarg.*
C. diffusa *Sarg.*
C. dunbari *Sarg.*
C. durobrivensis *Sarg.*
C. ellwangeriana *Sarg.*
C. ferentaria *Sarg.*
C. forbesiae *Sarg.*
C. formosa *Sarg.*
C. fucosa *Sarg.*
C. gemmosa *Sarg.*
C. glaucophylla *Sarg.*
C. laneyi *Sarg.*
Crataegus leiophylla *Sarg.*
C. lennoniana *Sarg.*
C holmesiana *Ashe*
C. macauleyae *Sarg.*
C. maineana *Sarg.*
C. matura *Sarg.*
C. ornata *Sarg.*
C. opulens *Sarg.*
C. parviflora *Sarg.*
C. pastorum *Sarg.*
C. pedicellata *Sarg*
C. persimilis *Sarg.*
C. pringlei *Sarg.*
C. rubicunda *Sarg.*
C. spissiflora *Sarg.*
C. streeterae *Sarg.*
C. succulenta *Lk.*
C. tenuiloba *Sarg.*
C. thayeri *Sarg.*
C. verecunda *Sarg.*

E. B. Sterling, Trenton N. J.

Cyclomyces greenei *Berk.*
Lactarius corrugis *Pk.*

F. C. Stewart, Geneva

Coleosporium senecionis (*Pers.*) *Fr.*
Fusarium aquaeductuum *R. & R.*

D. R. Sumstine, Kittanning Pa.

Grifola sumstinei *Murrill*
Hydnum earleanum *Sumst.*
Pholiota luteofolia *Pk.*
Pleurotus umbonatus *Pk.*

C. Thom, Storrs Ct.

Craterellus taxophilus *Thom*

C. Thal, Milwaukee Wis.

Cortinarius heliotropicus *Pk.*

H. L. Ward, Milwaukee Wis.

Lepiota acutesquamosa *Weinm.*

J. E. Weaver, Rochester

Lentinus lepideus *Fr.*

D. O. Wickham, Hotel Champlain

Clavaria pistillaris *L.*
Clitocybe multiceps *Pk.*
Geaster minimus *Schw.*

D. B. Young, Albany

Morchella deliciosa *Fr.*

SPECIES NOT BEFORE REPORTED

Amanita crenulata Pk.

Among fallen leaves in woods. Port Jefferson. August. In our specimens the pileus is more yellow and its margin more distinctly striate than in the type specimens. The mealiness at the top of the stem and the flocculent edge of the lamellae in some of the specimens are also yellowish.

Amanita lignophila Atk. ined.

Decaying wood in woods beyond Forest Home near Ithaca. G F Atkinson. A rare species similar in size and shape to Amanita mappa but separable from it by the grayish brown color of the pileus, the solid stem and the thicker membrane of its volva. The spores are globose, granular within and .0003–.0004 of an inch in diameter.

Amanita radicata Pk.

Sandy soil in woods and open places. Port Jefferson, Suffolk co. August. In our specimens the warts of the pileus are smaller than in the typical form.

Arenaria leptoclados Guss.

Wet rocky places near Little Falls. October. J. V. Haberer. This is A. serpyllifolia var. tenuior Koch of *Synoptical Flora of North America*, fasc. 2 p. 239. Introduced.

Arisaema stewardsoni Britton

Moist rich soil in woods. Lake Bonaparte. June. Similar to A. triphyllum in size and general appearance, but easily separated from it by the white spadix and spathe. Forms having a pale but striped spathe sometimes occur and appear to be intermediate between the two species.

Boletus atkinsoni n. sp.

PLATE R, FIG. 1-5

Pileus fleshy, convex or nearly plane, dry, grayish brown or yellowish brown, sometimes minutely rimosely squamulose, flesh white, taste mild; tubes convex, plane or slightly concave in the mass, adnate or slightly depressed around the stem, 3-4 lines long, the mouths minute, at first whitish and stuffed, soon open and yellow or subochraceous; stem stout, equal or slightly thickened at one or both ends, solid, reticulated wholly or at the top only with fine anastomosing brownish lines, pallid; spores fusiform or oblong, .0004-.0005 of an inch long, .00016-.0002 broad.

Pileus 3-4 inches broad; stem 2-4 inches long, 6-12 lines thick.

Woods. Port Jefferson. August. The species belongs to the section Edules. The reticulations of the stem are so delicate that they sometimes nearly disappear in drying.

Boletus laricinus Berk.

Under larch trees, Larix decidua Mill. Washington park, Albany. October. C. H. Prescott. Edible.

Boletus nobilis n. sp.

Woods. Port Jefferson. August. Edible. For description of the species see article on edible fungi.

Boletus rugosiceps n. sp.

PLATE Q, FIG. 6-10

Pileus firm, fleshy, very convex or hemispheric, becoming broadly convex, dry, rugosely pitted, ochraceous, sometimes tinged with red or orange, occasionally rimose areolate, the thin margin often extending slightly beyond the tubes, flesh white or whitish; tubes at first closed, depressed around the stem, their mouths yellow, becoming darker with age, minute, round; stem firm, subequal, solid, with elevated longitudinal lines or ridges, dotted with numerous brownish or yellowish points, pallid, often narrowed at the base; spores oblong fusiform, .0006-.0008 of an inch long, .0002-.00024 broad.

Pileus 1-3 inches broad; stem 3-4 inches long, 6-8 lines thick.

Woods. Port Jefferson. August. This species grows with B. rubropunctus, from which it is easily separated by its dry pileus, smaller tubes and stouter stem. This is large in proportion to the size of the pileus. In both the scabrously dotted stem is suggestive of Boletus scaber, but both are separable from that species by the yellow color of the tubes and the different dots of the stem.

Botrychium tenebrosum A. A. Eaton

Deerfield, Oneida co. July. J. V. Haberer. This is one of the smallest of the grape ferns.

Bryum pendulum Schp.

Clayville, Oneida co. B. D. Gilbert.

Cladonia verticillata Hoffm.

Adirondack mountains. Formerly considered a variety of C. gracilis, but now deemed worthy of specific distinction.

Clavaria botrytoides n. sp.

Ground in woods. Port Jefferson. August. Edible. For description of the species see the article on edible fungi.

Clavaria xanthosperma n. sp.

Stem very short, firm, solid, divided into numerous branches, white, sometimes becoming red where wounded, ultimate branches short, blunt or obtusely dentate at the apex, the axils rounded, the whole plant white, becoming yellowish or cream-colored with age; spores pale yellow, oblong, .0005-.0006 of an inch long, .00016-.0002 broad, slightly and obliquely pointed at one end.

Woods. Smithtown, Suffolk co. August.

It forms tufts about 2 inches high.

Collybia amabilipes Pk.

Dead trunks. Near Ithaca. June. G. F. Atkinson. Readily distinguished by its tawny, velvety stem.

Convolvulus repens L.

Shushan, Washington co. August. F. Dobbin. This species may be distinguished from C. spithamaeus by its long trailing or twining stems and by the rounded basal lobes of its leaves.

Cortinarius heliotropicus n. sp.

PLATE P, FIG. 1-7

Pileus thin, broadly campanulate, convex or nearly plane, fibrillose, viscid, heliotrope purple, generally spotted or variegated by yellowish white spots, flesh whitish, taste mild or slightly and tardily acrid, odor slight, resembling that of radishes; lamellae narrow, thin, close, rounded behind, adnexed, concolorous with the pileus when young, cinnamon when mature; stem firm, solid, or spongy within, usually slightly thickened at the base, silky fibrillose, viscid, whitish, spotted with purple or colored like the pileus, white within, spores elliptic, .0004-.0005 of an inch long, .0002-.00024 broad.

Pileus 1-2.5 inches broad; stem 1.5-3 inches long, 2-4 lines thick.

Woods. Smithtown. August. This is one of the most beautiful species of Cortinarius. It belongs to the section Myxacium.

In some specimens the spots on the pileus are large or confluent, in others they are almost or entirely absent, but usually they are small and distinct. The purple color of the lamellae is persistent for some time. In large specimens the margin is sometimes adorned by fibrillose scales of the veil.

Craterellus taxophilus Thom

Decaying vegetable matter under branches of ground hemlock, Taxus canadensis. Ithaca. October. C. Thom.

Crataegus persimilis Sarg.

Near Eastern avenue continued, Rochester. This species is allied to C. crus-galli from which it may be separated by its smaller flowers, more numerous stamens, more highly colored fruit and more conspicuously glandular serrate calyx lobes.

Crataegus beata Sarg.

Near the roundhouse of the Pennsylvania Railroad, Rochester. Also reported from several other places in and near Rochester. The 20 stamens with dark maroon colored anthers constitute a peculiar character of this species. It and the seven following species belong to the section Pruinosae. In all of them the fully grown but unripe fruit is more or less pruinose.

Crataegus lennoniana Sarg.

Seneca park, Rochester. Reported from Adams Basin, Monroe co., and Murray, Orleans co., by M. S. Baxter and from Buffalo by

J. Dunbar. In this and the preceding species the flowers have 20 stamens with red anthers and the fruit is longer than broad.

Crataegus leiophylla Sarg.

Seneca park, Rochester. This thorn takes its specific name from the smoothness of its leaves. Its flowers have 20 stamens but the anthers are pale yellow. Its fruit remains green and pruinose late in the season, ripening in November.

Crataegus formosa Sarg.

Seneca park, Rochester. It has been reported from Buffalo by Mr Dunbar. Its stamens are 20 and the anthers pale yellow. Its fruit also is longer than broad. The tips of the calyx lobes are often deciduous from the ripe fruit.

Crataegus compta Sarg.

Seneca park and Genesee Valley park, Rochester. It has also been found at Rush, Monroe co. and Avon, Livingston co. by Mr Baxter and at Buffalo by Mr Dunbar. Its stamens are 10 and the fruit is generally longer than broad, and is often somewhat pointed at the base. It is peculiar in having a bitter taste. The mature leaves are dark bluish green on the upper surface.

Crataegus diffusa Sarg.

Seneca park, Rochester. Niagara Falls. C. S. Sargent. A shrub with numerous stems and widespreading branches. Its 10 stamens with purple anthers constitute one of its peculiar features. On vigorous young shoots the leaves are sometimes as broad as they are long and they have petioles shorter than those of the leaves on lateral or fertile branches. The fruit is similar in size and shape to that of C. compta.

Crataegus opulens Sarg.

Eastern bank of the Genesee river in the northern part of Rochester. The opulent thorn is a rare but well marked species. In the leaves of young and vigorous shoots the basal pair of lobes is enlarged and distinctly separated from the pair above by deep clefts in the margins of the leaf. This gives a three lobed appearance to the leaf. Sometimes the basal lobes are themselves slightly lobed. The fruit is either globose or depressed globose.

Crataegus maineana Sarg.

West side of Seneca park, Rochester. Near Portage, Livingston co. Also found at Adams Basin by Mr Baxter and at Buffalo by

Mr Dunbar. The late ripening globose fruit and the bronze red autumnal foliage are noticeable characters of this species. It has 10 stamens with purple anthers as in C. diffusa, but in its almost deltoid or triangular leaves and its nearly entire calyx lobes it is quite distinct from it.

Crataegus baxteri Sarg.

Seneca park, Rochester. It has also been found at Honeoye lake by Mr Baxter and at Chapinville, Ontario co. by Professor Sargent. It and the next following species belong to the section Intricatae.

Crataegus verecunda Sarg.

Seneca park, Rochester. This is at present the only known locality of this very rare thorn. It is a smaller shrub than the Baxter thorn and its smaller fruit is longer than broad. The fruit of C. baxteri is nearly or quite globose and ripens later.

Crataegus fulleriana Sarg.

In the northern part of Rochester on the east bank of Genesee river. It has been found at Rush and Rochester Junction, Monroe co., by Messrs Baxter and Dunbar. This and the two following species belong to the section Molles. The Fuller thorn is a fine and an attractive species. Its flowers have 20 stamens and its large scarlet hairy but shining fruit is longer than broad. It may be either rounded or pointed at the base and is crowned by the long, very narrow and persistent calyx lobes which constitute a peculiar feature of the species.

Crataegus ellwangeriana Sarg.

Rochester and near Portage, Livingston co. The Ellwanger thorn becomes a tree of considerable size. It differs from the Fuller thorn in having only 8-10 stamens in its flowers, in its shorter, stouter spines, shorter pedicels and broader calyx lobes.

Crataegus spissiflora Sarg.

Genesee Valley park, Rochester. Between North Albany and Menands, east of Troy road. The peculiar character of this species and one suggestive of the specific name is its small compact clusters of flowers. Much of the hairiness of its inflorescence and early foliage disappears with age. Its fruit is generally a little longer than broad. It is glabrous when ripe and of a bright scarlet color, beautiful to behold.

Crataegus durobrivensis Sarg.

Banks of the Genesee river in the northern part of Rochester. Near North Albany. It has also been found at Niagara Falls by C. S. Sargent and at Buffalo by J. Dunbar. The Rochester thorn has flowers with 20 stamens, rose-red anthers and 4-5 styles. The calyx lobes are slightly hairy inside, the fruit is globose or nearly so and is said to persist on the branches till midwinter. The species has been placed by Professor Sargent in the section Dilatatae, though somewhat aberrant in its characters. In our synopsis of the species we have placed it temporarily in the section Lobulatae, from which it diverges in its more numerous stamens.

Crataegus acclivis Sarg.

Steep banks of the Genesee river in the northern part of Rochester. It has also been found at Rush by M. S. Baxter and at Niagara Falls by C. S. Sargent. It is a large fine species easily recognized by its nearly erect branches and its large bright red fruit which is generally a little longer than broad. It sometimes retains, when ripe, some of the hairiness which is so noticeable on the calyx at flowering time. A peculiar feature of the species consists of the broad, lunate, coarsely serrate and persistent stipules which are found on young and vigorous shoots. The lowest pair of lobes on some of the large leaves of these shoots is larger than the others. The flowers have 5-7 stamens with pink anthers. This and the next following species belong to the section Lobulatae.

Crataegus pedicellata Sarg.

Rochester. The pedicellate thorn is a large, handsome and attractive species scarcely less beautiful in fruit than in flower. The fruit is either oblong or pyriform and of a bright scarlet color. It is crowned by the generally persistent, erect or incurved, glandular serrate calyx lobes. Its 10 stamens have rose-red anthers.

The 10 following species belong to the section Tenuifoliae.

Crataegus parviflora Sarg.

Seneca park, Rochester. It has also been found at Rush by M. S. Baxter. It may be recognized when in bloom by its loose clusters of small flowers supported on long, branched, slender peduncles. The stamens are 5-6, the anthers pink and the styles 2-3.

Crataegus streeterae Sarg.

Genesee Valley park, Rochester. A peculiar feature of this species is the long acuminate point of its leaves. The blades of

some of the leaves of vigorous young shoots are more or less wrinkled. The stamens are 7-10, the anthers rose-red and the styles 3-4.

Crataegus glaucophylla Sarg.

Seneca park and Genesee Valley park, Rochester. Westport, Essex co. In the typical form of this species the leaves at flowering time have a glaucous bloom on the upper surface and are pale and glaucous beneath. This glaucous bloom is sometimes wanting. The stamens vary from 5-10 and the anthers are rosy red. On vigorous shoots the leaves are sometimes slightly cordate. The fruit is longer than broad, bright red or scarlet and sometimes hangs on the branches long after the leaves have fallen.

Crataegus ornata Sarg.

Genesee Valley park, Rochester. Found also at La Salle, Niagara co., by J. Dunbar. On fertile branches the leaves are often oblong ovate but on vigorous young shoots they are broadly ovate. The stamens are 10, the anthers rose-red and the styles 2-3. The fruit hangs in drooping clusters, is of a bright scarlet color and quite ornamental.

Crataegus rubicunda Sarg.

Genesee Valley park, Rochester. It has been found at Buffalo by J. Dunbar. It closely resembles the preceding species, from which it differs in the slight hairiness of the calyx and pedicels, in the red flesh of the fruit and in the yellowish green color of the foliage.

Crataegus tenuiloba Sarg.

River bank south of Rochester. The thin lobed thorn has ovate or broadly ovate leaves and is similar in its general characters to the two preceding species but it differs from them in having smaller, fewer flowered clusters and in its bright scarlet fruit which is gradually narrowed toward the base.

Crataegus colorata Sarg

Genesee Valley park, Rochester. It has also been found at Murray, Orleans co. by M. S. Baxter and at Buffalo by J. Dunbar. It differs from the five preceding species in having its ripe fruit crimson instead of scarlet. Its stamens are 10, anthers rose-red and styles 3-4. Its branches bear numerous spines which are slender or stout, straight or curved.

Crataegus beckwithae Sarg.

Genesee Valley park, west side of the river, Rochester. The Beckwith thorn differs from all the preceding species of this section in its globose fruit, It is sometimes full and rounded at the base and sometimes pointed. It is dark crimson when ripe and its flesh is tinged with red. The calyx lobes at flowering time are marked on the inside toward the tips with minute white dots. This peculiar character is present in all our flowering specimens. The leaves are broadly ovate or almost triangular. On vigorous young shoots some of them are slightly cordate.

Crataegus dunbari Sarg.

East bank of the Genesee river in the northern part of Rochester. It has also been found at Adams Basin by M. S. Baxter and in Delaware park, Buffalo by J. Dunbar. The Dunbar thorn differs decidedly from all the preceding species of this section in its leaves which are oval or suborbicular and become much thicker and firmer with age. The fruit is globose or subglobose and crimson when ripe. The stamens are 10, anthers red, styles 3-4.

Crataegus benigna Sarg.

Genesee Valley park, Rochester. The benignant thorn is unlike any of the previously recorded species of this section in having 15-20 stamens. The anthers are red and the fruit, which is longer than broad, is scarlet. The leaves are often truncate or slightly cordate at the base, specially on leading vigorous shoots.

Crataegus cupulifera Sarg.

Seneca park, west side, Rochester. It has also been found at Rush and Honeoye lake by M. S. Baxter, and at Buffalo by J. Dunbar. The cup-bearing thorn has the flowers cup-shaped. The stamens are 10, the anthers pink, the styles 3-4 and the calyx lobes hairy inside. The fruit is globose or nearly so and is scarlet when ripe.

Crataegus macauleyae Sarg.

Genesee Valley park, Rochester. The Macauley thorn may readily be distinguished from the preceding one by its 20 stamens with pale yellow anthers. It has 4-5 styles and its ripe fruit is crimson and has a more prominent calyx rim. The fruit in both is nearly alike in size and shape. Both species belong to the section Coccineae.

Crataegus gemmosa Sarg.

Genesee Valley park, Rochester. In this species the leaves are oval or occasionally rhomboidal or obovate. The stamens are 20,

anthers rose-red and styles 2-3. The ripe fruit is scarlet, a little longer than broad and crowned with a calyx rim. The calyx lobes are hairy inside, reflexed and fringed on the margin with long stipitate glands.

Crataegus deweyana Sarg.

Hagaman swamp near Rochester. It has also been found at Rush by M. S. Baxter. In the Dewey thorn the leaves are ovate or broadly ovate and sharp pointed or acuminate. The stamens are 7-10, the anthers dark rose-red and the styles 2-3. The ripe fruit is scarlet, globose or subglobose and destitute of a calyx rim. The calyx lobes are not strongly or conspicuously glandular serrate.

Crataegus ferentaria Sarg.

Near the roundhouse of the Pennsylvania Railroad, Rochester. The light armed thorn has oval or rhomboidal leaves acute at the apex and rounded or broadly cuneate at the base. The petioles are generally less than half an inch long and they often become red toward the end of the season. The stamens are 10, anthers pale yellow, styles two and calyx lobes distinctly glandular serrate. The ripe fruit is crimson, globose or subglobose and destitute of a prominent calyx rim. The ventral cavities of the nutlets are deep and sometimes crowd upon or cut through the lateral walls.

Crataegus laneyi Sarg.

Genesee Valley park, Rochester. The Laney thorn may be distinguished from the three preceding species by its having 10-15 stamens, pale yellow anthers, 2-4 styles and a villose inflorescence. It and the other three species mentioned belong to the section Tomentosae.

Crataegus tatnalliana Sarg.

North and west of North Albany. In this plant the fruit is globose or oval, and the leaves are often more or less twisted or contorted on the margin, as if there was an excessive development of tissue in that part of the blade. In the leaves of C. pringlei the reverse condition appears to prevail. The margin of the leaf is decurved, apparently because of a deficient development of the marginal tissue or an excessive development of the central portion of the leaf. This makes the leaf convex above, concave beneath.

Crataegus hudsonica Sarg.

Tivoli hollow between Albany and West Albany. This species is closely related to C. suborbiculata Sarg. and like that species it has suborbicular leaves. It differs from it in having the

leaf lobes more sharp pointed, in having fewer styles and nutlets and in its globose mostly drooping and uniformly red fruit. Its styles and nutlets are generally 3. Its flowers open about May 20 and its fruit is ripe about the middle of October.

Of the 35 species of Crataegus here recorded, specimens of 33 were collected in and near Rochester. In order to indicate more clearly the distinguishing features of the Rochester species, some of which resemble each other very closely, the following synoptic tables of the sections and species have been prepared. The table of the sections is intended to include only the Rochester species. A few species found in and about Rochester but not recorded in the preceding pages, they having been previously reported, have been included in the table of species. They are C r a t a e g u s c r u s - g a l l i, C. p u n c t a t a, C. p r i n g l e i, C. h o l m e s i a n a, C. m a t u r a, C. m a c r a c a n t h a, C. s u c c u l e n t a and C. t o m e n t o s a.

Synopsis of the sections

Nutlets with the ventral faces excavated.....Tomentosae
Nutlets with the ventral faces not excavated..... 1
1 Leaves gradually narrowed to a short petiole..... 2
1 Leaves not having this character..... 3
2 Upper surface of the leaves shining..... Crus-galli
2 Upper surface of the leaves not shining.....Punctatae
3 Fruit large, more than 6 lines long..... 4
3 Fruit medium or small, 6 lines long or less..... 5
4 Flower clusters hairy, ripe fruit more or less hairy except in C. s p i s s i f l o r a.....Molles
4 Flower clusters hairy or glabrous, ripe fruit glabrous except in C. a c c l i v i s.....Lobulatae
5 Fruit distinctly pruinose before ripening.....Pruinosae
5 Fruit not distinctly pruinose before ripening..... 6
6 Leaves thin, glabrous except when young.....Tenuifoliae
6 Leaves becoming thick or subcoriaceous with age..... 7
7 Fruit falling while yet hard.....Intricatae
7 Fruit becoming soft before falling.....Coccineae

Synopsis of the species

CRUS-GALLI

Stamens 10 — C. c r u s - g a l l i
Stamens 10–20 — C. p e r s i m i l i s

PUNCTATAE

Stamens 20 — C. p u n c t a t a

MOLLES

Stamens 15–20 C. fulleriana
Stamens 8–10 1
1 Ripe fruit hairy 2
1 Ripe fruit glabrous C. spissiflora
2 Some of the mature leaves convex C. pringlei
2 None of the mature leaves convex C. ellwangeriana

LOBULATAE

Stamens 20 C. durobrivensis
Stamens 10 C. pedicellata
Stamens 5–8 3
3 Fruit hairy C. acclivis
3 Fruit glabrous C. holmesiana

PRUINOSAE

Stamens 15–20, anthers red or maroon 4
Stamens 15–20, anthers pale yellow or whitish 5
Stamens 7–10 6
4 Anthers dark maroon color C. beata
4 Anthers red C. lennoniana
5 Fruit ripe in November, calyx rim prominent C. leiophylla
5 Fruit ripe in October, calyx rim absent C. formosa
6 Fruit longer than broad 7
6 Fruit not longer than broad 8
7 Fruit bitter, anthers red C. compta
7 Fruit sweet, anthers purple C. diffusa
8 Leaves on vigorous shoots often trilobed, anthers red C. opulens
8 Leaves on vigorous shoots not trilobed, anthers purple C. maineana

INTRICATAE

Fruit subglobose, 6 lines long C. baxteri
Fruit oblong or obovate, 4–5 lines long C. verecunda

TENUIFOLIAE

Fruit longer than broad 9
Fruit not longer than broad 14
9 Stamens 5–6, anthers pink, fruit crimson C. parviflora
9 Stamens 7-10, anthers red, fruit scarlet C. streeterae
9 Stamens 7-10, anthers purple, fruit scarlet C. glaucophylla
9 Stamens 10 10
9 Stamens 15-20 C. benigna

10 Fruit narrowed toward the base, obconic
C. tenuiloba
10 Fruit not obconic 11
11 Ripe fruit scarlet 12
11 Ripe fruit crimson 13
12 Pedicels and calyx glabrous C. ornata
12 Pedicels and calyx slightly hairy C. rubicunda
13 Fruit ripe in August C. matura
13 Fruit ripe in September C. colorata
14 Leaves triangular ovate, styles 5 C. beckwithae
14 Leaves oval or suborbicular C. dunbari

COCCINEAE

Stamens 10, anthers pink, fruit scarlet C. cupulifera
Stamens 20, anthers pale yellow, fruit crimson
C. macauleyae

TOMENTOSAE

Stamens 20, anthers red 15
Stamens 10, anthers pale yellow 16
Stamens 7-10, anthers red C. deweyana
Stamens 10-15, anthers pale yellow C. laneyi
15 Leaves ovate or ovate oblong C. tomentosa
15 Leaves elliptic C. succulenta
15 Leaves orbicular C. gemmosa
16 Fruit drooping, spines 1.5-2.5 inches long C. ferentaria
16 Fruit erect, spines 2.5-4 inches long C. macracantha

Dipsacus laciniatus L.

Near Beaver park, Albany. August. This is a recently introduced species but it appears to be well established here but being within the city limits it may not persist many years. It may be distinguished from the common teasel, D. sylvestris, by its laciniate or pinnatifid leaves. Its flowers are paler than in that species.

Eocronartium typhuloides Atk.

Living moss, Anomodon attenuatus. Cascadilla woods near Ithaca. July. G. F. Atkinson.

Falcata pitcheri (T. & G.) Kuntze

North Greenbush and West Albany. This species is not very unlike F. comosa, (Amphicarpaea monoica of the older botanies) with which it was formerly united. It is chiefly distinguished by its larger leaves and the tawny villosity of its stem.

Fusarium aquaeductuum R. & R.

Refrigerator drains. Geneva. September. F. C. Stewart. Our specimens of the "refrigerator fungus" were taken from the drain-pipe of a house refrigerator. The fungus sometimes multiplies till it chokes the drain and stops the outflow of the water.

Galera capillaripes Pk.

North Elba, Essex co. August. This little mushroom resembles Galera tenera in color, but it is much smaller and has a very slender, almost filiform stem, more narrow and distant lamellae and smaller spores.

Geranium bicknellii Britton

Ledges and rocky places. Near Brownsville, Jefferson co. June. C. H. Peck. Little Falls. October. J. V. Haberer.

Gyrostachys ochroleuca Rydb.

Roadsides and pastures in rather dry soil. Lake Pleasant. August. C. H. Peck. Dry hillsides, near Ballston lake. S. H. Burnham. This species is closely allied to G. cernua.

Hexagona micropora Murrill

Dead branches. Verona, Oneida co., and South Bay, Madison co. July.

This species is closely related to and was formerly included in Hexagona alveolaris (DC.), which is equivalent to Favolus europaeus Fr. It may be separated from it, by its smoother pileus and smaller pores.

Hypholoma rugocephalum Atk.

Low moist ground. Port Jefferson. August. G. F. Atkinson. This species is at once recognizable by its brown rugose pileus.

Hypomyces banningiae Pk.

Parasitic on some mushroom which it transforms to such a degree as to render it unrecognizable. Pittsford, Monroe co. August. F. S. Boughton.

Hypomyces inaequalis Pk.

Parasitic on Amanita rubescens. Catskill mountains. F. H. Mickleborough. The parasite prevents the expansion of the pileus and whitens both stem and pileus. In the preceding species the spores have no septum, in this one they have a single septum near one end. They are therefore divided into two unequal parts and this suggests the specific name.

Lachnocladium semivestitum B. & C.

Low marshy places. Smithtown. August. G. F. Atkinson. This fungus might easily be mistaken for a species of Clavaria, but careful inspection shows that it is clothed toward the base by a minute downy white tomentum.

Lactarius brevis n. sp.

PLATE Q, FIG. 1-5

Pileus thin, broadly convex, plane or slightly depressed in the center, glabrous, azonate, whitish, sometimes with a slight alutaceous tinge, flesh white, milk whitish, quickly changing to sulfur yellow on exposure to the air, taste acrid; lamellae thin, narrow, crowded, adnate, whitish or pallid; stem short, equal or slightly tapering downward, solid or somewhat spongy within, glabrous, white; spores subglobose, .0003 of an inch long, .00025-.0003 broad.

Pileus 1-2 inches broad; stem about 1 inch long, 2-4 lines thick. This species is closely related to L. theiogalus from which it may be separated by its white or whitish color, its smaller size, solid or stuffed stem and the absence of tomentum from the base of the stem.

Lactarius colorascens n. sp.

Pileus thin, nearly plane, becoming centrally depressed, moist, glabrous, whitish or pallid when young, becoming brownish red with age, milk white, changing to sulfur-yellow on exposure to the air, taste bitter; lamellae thin, close, adnate or slightly decurrent, whitish, becoming yellowish with age; stem equal, solid, even, whitish, becoming brownish red with age; spores globose, rough, .0003 of an inch in diameter.

Pileus 1-2 inches broad; stem 1-1.5 inches long, 2-3 lines thick.

Woods. Port Jefferson. August. G. F. Atkinson. In the mature plant the color is similar to that of L. camphoratus, but the species is very distinct in the color of its milk and in its bitter taste.

Pholiota appendiculata n. sp.

PLATE P, FIG. 8-17

Pileus fleshy, firm, broadly convex or nearly plane, viscid when moist, shining, squamose with appressed spotlike scales, appendiculate on the margin with fragments of the veil, dark red when young, soon fading to pink and sometimes becoming yellowish brown or grayish brown, flesh at first purplish red, specially in the lower part, whitish or pale yellow when mature; lamellae thin,

close, rounded behind, adnexed or decurrent with a tooth, pale yellow or almost white, becoming brownish; stem short, firm, solid or with a small cavity, white above, brownish and squamose below the slight evanescent annulus, white within, the veil white, at first concealing the young lamellae, soon breaking into fragments and partly adhering to the margin of the pileus, partly to the stem.

Pileus 1-3 inches broad; stem about 1 inch long, 2-4 lines thick.

Decaying sawdust. McLean, Tompkins co. July. The annulus consists of a row of scales or fragments of the veil around the upper part of the stem, the greater part of the veil usually adhering to the margin of the pileus. The color of the spores prevents the reference of the species to the genus Hypholoma.

Salix serissima (Bail.) Fern.

North Elba and Lake Bonaparte. June. This willow has recently been separated from Salix lucida to which it was formerly joined as a variety. Its leaves are merely acute or short pointed at the apex, paler on the lower surface, very finely glandular serrate, the petioles have 1-3 pairs of glands at the top and the fertile aments are very late in ripening their capsules.

Scirpus occidentalis (Wats.) Chase

Oneida lake, Thompson lake and Lake Bonaparte. This bulrush was formerly considered a variety of Scirpus lacustris, but it has recently been published as a distinct species. It is distinguished from S. lacustris by its two cleft style, its smaller lenticular achene and its pubescent scales.

Sisyrinchium arenicola Bickn.

Sand barrens between Rossville and Kreischerville, Richmond co. May. S. H. Burnham.

Stachys sieboldi Miq.

Cinder dumps along the railroad north of Whitehall. September. S. H. Burnham. Introduced.

Teucrium boreale Bickn.

Low moist ground. South side of Oneida lake. J. V. Haberer.

Uredinopsis atkinsonii Magn.

Living fronds of the marsh shield fern, Dryopteris thelypteris. Near Ithaca. August. G. F. Atkinson.

Uredinopsis osmundae Magn.

Living or languishing fronds of cinnamon fern, Osmunda cinnamomea. Near Malloryville, Tompkins co. August. G. F. Atkinson.

Viola amoena LeConte

Wet places. Common in hilly and mountainous districts. In *Flora of the State of New York* this is united with Viola eolanda, but as the tendency at the present time is toward the separation of closely related forms it seems best to restore this violet to its original specific rank.

Viola latiuscula Greene

Light gravelly soil. Minerva. This species was found in flower early in May. In our specimens the lower leaves have a slight purplish tinge.

Viola septentrionalis Greene

Borders of woods and grassy places. Warrensburg, Warren co., and Minerva, Essex co. The northern blue violet was found in flower the last week of May. Its lower leaves are small, reniform or suborbicular, its upper ones are bluntly pointed and its sepals are ciliate.

Xyris montana Ries

Borders of White lake, Forestport, Oneida co. July. J. V. Haberer. It also occurs in Cranberry marsh, Sandlake, Rensselaer co. It was formerly thought to be a variety of X. flexuosa, but it is now separated as a distinct species.

Zygodesmus granulosus Pk.

Decaying wood of poplar. East Schaghticoke. August.

REMARKS AND OBSERVATIONS

Agaricus abruptus Pk.

In his *Monograph I*, p. 348, Elias Fries described a mushroom under the name Agaricus abruptus. In *Hym.. Eur.*, p. 245, he placed this species in his subgenus Flammula, still retaining for it the original name. In *Sylloge* the subgenus Flammula, with many other subgenera of Fries, was given generic rank and the name Agaricus abruptus was changed to Flammula abrupta, thus vacating the name Agaricus abruptus and leaving it available for some other application. But Rule 5 of what is known as the Rochester code forbids the use of such names, and though this rule may not be accepted in its present form by the coming international congress

of botanists, I have thought it best to change the name Agaricus abruptus Pk. and several other names given under similar conditions, so that they shall not conflict with this rule. I therefore substitute the name

Agaricus abruptibulbus for Agaricus abruptus Pk. N. Y. State Mus. Mem. 4, p. 163

Agaricus chlamydopus for Agaricus cothurnatus Pk. Torr. Bot. Club Bul. 31, p. 181

Agaricus halophilus for Agaricus maritimus Pk. Torr. Bot. Club Bul. 26, p. 66

Agaricus magniceps for Agaricus magnificus Pk. Torr. Bot. Club Bul. 26, p. 67

Agaricus micromegethus for Agaricus pusillus Pk. N. Y. State Mus. 54th An. Rep't, p. 152

Agaricus praerimosus for Agaricus tabularis Pk. Torr. Bot. Club Bul. 25, p. 325

Agaricus pilosporus for Agaricus sphaerosporus Pk. Torr. Bot. Club Bul. 31, p. 181

Agaricus cothurnatus Fr. is considered in *Syllog* the equivalent of Stropharia cothurnata Fr. In like manner

Agaricus maritimus Fr. is Inocybe maritima Fr.

Agaricus magnificus Fr. is Amanita magnifica Fr.

Agaricus pusillus Pers. is Voivaria parvula Weinm.

Agaricus tabularis Fers. is Tricholoma grammopodium (Bull.)

Agaricus sphaerosporus Krombh. is Lepiota naucina Fr.

Antennaria canadensis Greene

Near North Albany. May. This species is common in the northern and eastern part of the State, but the staminate plants are rarely seen. I have found them only in the single locality here indicated.

Blephariglottis ciliaris (L.) Rydb.

Karner. July. This is Habenaria ciliaris R. Br. in Gray's *Manual*. It is a rare species in our State at the present time, but it is said to have been more common many years ago. In New York State Cabinet of Natural History, 18th Rep't, p. 136,

it is recorded as having been found on the Pine plains of Schenectady but in my numerous botanizing trips in this region it was not found till this year. It appears to have recently become established in the Karner locality, as it was found in a place frequently visited before. The plants were few and were growing among low shrubs in a rather dry place. The flowers are very beautiful.

Blephilia hirsuta (Pursh) Torr.

Low moist ground. East Schaghticoke. August. Rare.

Botrychium obliquum Muhl.

This grape fern is common in Oneida county, and is as variable as it is common. Dr Haberer has collected numerous specimens of it in the vicinity of Utica and has contributed to the herbarium a fine series of specimens representing all of our published varieties of it.

Cantharellus cinnabarinus Schw.

This small chantarelle was found in abundance near Port Jefferson in August. In one station several forms of it were growing in close proximity. In one form the whole plant had the usual cinnabar red color, but in some of the plants the stem was hollow. In another form the color of the pileus and stem was red as usual, but the lamellae were yellow. In a third form the cap was pale pink as if its normal color had faded. A fourth had pale pink lamellae and the margin of the pileus was strongly curved upward, making the pileus appear narrow and giving the whole plant a club shape. In a fifth form the whole plant was yellow. In all except the first the stem, so far as investigated, was hollow. But the most remarkable thing in the variations is the difference in the color of the spores. We are disposed to consider the color of the spores in any given species as one of its most constant and reliable characters. But in this case the plants with red or pink lamellae had spores that appeared pink in the mass, those with yellow lamellae shed yellow spores. Yet the spores were alike in size and shape, and we are obliged to conclude that all these forms belong to one species.

Carex castanea Wahl.

This rare sedge was credited to Essex county in the *Flora of the State of New York*, on the authority of Dr Kneiskern. In my own explorations in the county I had never met with it till the past season. It was found growing sparingly near Minerva. It is an early flowering species. It is Carex flexilis Rudge.

Carex formosa Dew.

This rare species was found in Seneca park, Rochester, on June 1. It was then in good condition for collecting.

Carex setifolia (Dew.) Britton

Limestone rocks, cliffs and precipices are generally given as the habitat of this pretty little sedge. But it is not limited to such places. Fine specimens of it were found in July growing in wet, mucky soil in woods about Bergen swamp. In more open wet places near it the rare Carex crawei Dew. was found.

Cercospora circumscissa Sacc.

This fungus was plentiful in the region about Lake Pleasant the past season. It attacks the living leaves of the chokecherry and the wild blackcherry. It kills the leaf tissues in small circular spots, and the dead tissues soon separate from the living and fall, leaving clean-cut circular perforations in the leaf.

Cypripedium reginae Walt.

A form of this showy species occurs in Bonaparte swamp in which the whole flower is white.

Eleocharis palustris vigens Bail.

This is a tall stout variety growing in shallow water. It was found growing in Oneida lake at Lakeport and specimens were collected. Variety glaucescens was found growing in low wet places at South Bay and in Bonaparte swamp. Judging from the external appearance alone it would be difficult to believe that these two plants are varieties of the same species.

Eriophorum alpinum L.

The alpine cotton grass is now plentiful in one place in Bonaparte swamp though it was not seen in my exploration of the swamp in 1899. It is also abundant in an old meadow near Elm lake in Hamilton county.

Fragaria americana (Porter) Britton

This strawberry is abundant in groves and the borders of woods at Lake Bonaparte. The flowers are scarcely more than 3 lines broad.

Gratiola aurea Muhl.

Fine specimens with slender weak stems a foot or more long were found growing in the marshy borders of a lake near Smithtown, Suffolk co.

Hieracium praealtum Vill.

This noxious weed has become very abundant in Lewis county. From Lyon Falls to Carthage it is plentiful along the railroad, in pastures and meadows and by roadsides. It is also common along the Carthage and Adirondack Railroad. It rivals buttercups and daisies in giving color to meadows infested by it. The orange hawkweed, Hieracium aurantiacum, which is associated with it in some places and which is no less pestilential, was not seen here.

Hydnum adustum Schw.

An unusual form of this fungus was found in the western part of the State by G. E. Morris. The pileus is shaped like the bowl of a goblet by the upward curving of its margin and the stem is central. The whole plant is white.

Hygrophorus laurae decipiens n. var.

Pileus thin, stem slender, less than 6 lines thick, generally cespitose and attenuated at the base, pileus not changing color in drying, gills also nearly unchangeable. Edible. Near Elm lake, Hamilton county. September.

Hypholoma sublateritium (Schaeff.) Fr.

In October specimens of the brick-red hypholoma were sent to me with the statement that two persons who had eaten stewed mushrooms of this kind had been made sick by them. In one case "a severe headache with tingling and numbness in hands and arms and a feeling of general weakness and relaxation" developed in 15 hours after eating and lasted half an hour. In the other case the person "was attacked with violent nausea and purging." The difference in the symptoms of the two persons and the long time between the eating and the development of the symptoms led me to think that the mushrooms were not responsible for the sickness. It seemed to me that by some mistake the samples sent me were not the same kind as those that had been eaten or that the sickness was due to some other cause. As the samples sent me were still in fairly good condition, I concluded to try their edible quality myself. Three caps were selected, fried with butter and eaten. No harm and no unpleasant results followed, and my opinion of the innocence of the mushrooms was confirmed.

It is proper to add that in the typical form of the species the taste is said to be bitter, but in these specimens no bitter flavor was perceptible, though in other respects they exhibited the characters of the species.

Themushroom eaten evidently were Clitocybe illudens? Ed

Juniperus nanus Willd.

A large form of this juniper occurs at Lake Bonaparte. It forms circular patches as usual, but the branches are more erect and much taller. They are 6-8 feet tall and have a basal diameter of 2-4 inches. The leaves are 4-6 lines long and sometimes abruptly sharp pointed, sometimes gradually tapering into a subulate point. This form seems to make an approach toward Juniperus communis.

Limnorchis dilatata linearifolius Rydb.

Hidden lake, Herkimer county. J. V. Haberer. This variety may be distinguished from the typical form of the species by its more narrow linear leaves.

Marasmius resinosus niveus Pk.

As there is a Marasmius niveus Mont. a rigid observance of the rules of the Rochester code requires that this variety name should be changed. I therefore substitute for the name given in the report for 1902, p. 38, Marasmius resinosus candidissimus.

Osmunda claytoniana L.

This common fern sometimes grows in "fairy rings." Three examples of this kind of growth were seen at Lake Pleasant. In one there was a continuous line of fronds forming an ellipse of which the long diameter was about 3 feet. In another they formed about three fourths of the circumference of a circle, the line being interrupted in one place. In the third example the line was continuous and formed the circumference of a circle of which the diameter was about 2 feet. All the rings were near each other in a meadow.

Oxalis cymosa Small

This is a common species in the eastern part of the State. It is very variable, being glabrous or villose above and glabrous below or wholly villose. Its flowers are usually yellow, but sometimes they are very pale yellow or almost white. The color of the stem and leaves varies from yellowish green to purplish brown.

Phacelia dubia (L.) Small

Near Jamesville, Onondaga co. May. Mrs L. L. Goodrich. The specimens are in fine flowering condition. Specimens collected and sent by Mrs Goodrich in October 1903 were also in flower. The two sendings show that the plant may flower either in spring or in autumn.

Picea canadensis (Mill.) B. S. P.

Lake Pleasant. June. The white spruce occurs sparingly in various parts of the Adirondack region. All of our spruces as well as the hemlock drop their leaves from the drying branches in consequence of which it is difficult to prepare satisfactory herbarium specimens. I have tried in various ways to overcome this difficulty and have inquired of many botanists both of this country and of Europe if they could tell me how to prepare specimens of these branches so that they might retain their leaves. Recently Mr William Richards gave me a recipe which was intended to meet this difficulty. It was taken to a druggist who prepared a sufficient quantity for trial. As soon as opportunity was given, specimens of suitable size both of the white spruce and the black spruce were taken and treated according to directions. The result has been quite satisfactory. The specimens have dried and retained their leaves to the present time. The color of the leaves is slightly affected, but the specimens are far more satisfactory than the bare twigs with leaves placed in packets by themselves. For the benefit of any who may wish to avail themselves of this method of preparing specimens of this kind a copy of the recipe is here given.

Recipe

For the treatment of fresh herbarium specimens of spruce and hemlock trees to prevent the leaves from falling from the twigs.

alum	500	gr.
salt	125	"
saltpeter	60	"
potash	300	"
white arsenic	100	"

Dissolve in 1 quart of water, cool and filter. To 1 quart of this solution add 4 quarts of glycerin and 1 quart of alcohol.

Immerse the fresh specimens in this mixture, letting them remain in it at least 48 hours. When taken out wash away any excess of mixture adhering to them with warm water.

After the external moisture has evaporated the specimens may be placed in drying papers and put in press in the usual way. When thoroughly dry they may be mounted on the herbarium sheets and placed in the herbarium.

Prunus americana Marsh.

This species of wild plum is common in the vicinity of Albany. It blossoms a little later than Prunus nigra. Its calyx lobes often terminate in two or three minute teeth.

Prunus pennsylvanica L. f.

A small tree of the wild red cherry was observed at Lake Bonaparte, the ripening fruit of which was white. Is it an albino?

Pterospora andromedea Nutt.

Port Henry. August. Miss H. A. Edwards. The contributed specimen is in fruiting condition, 35 inches long with a stem diameter of $\frac{5}{16}$ of an inch and bears more than 60 capsules. In *Flora of New York State* this species is credited to "various places in the vicinity of Albany," but it seems to have disappeared entirely from this locality. It is also credited to Port Henry, having been found there more than 60 years ago. It is gratifying to know that it still exists there.

Rosa sayi Schw.

Griswold's Mills, Washington co. July. S. H. Burnham. This rose also occurs in the vicinity of Westport.

Rudbeckia hirta L.

Two forms of this very common weed, both of which were new to the herbarium, were found by Miss C. S. Parsons in the western suburbs of the city.

Rudbeckia laciniata L.

This plant is subject to the attacks of a gall-producing insect. Specimens sent by Mrs Burnham from Washington county have from 1-3 globular green galls developed from the side or base of each head of flowers. In one example a branch 1.5 inches long had developed at a right angle to the stem just beneath the flower head. The branch itself bore a flower head.

Salix amygdaloides Anders.

A single tree of this species was found by Mr R. B. Hough at Lake Bonaparte. It is 25 or 30 feet tall, with a trunk diameter of about 8 inches. It extends the range of the species in our State farther north than before, but the species is known to occur still farther north in Canada. Its presence at Lake Bonaparte may be accidental, as only a single tree has yet been found there. To the six species of willow previously found in Bonaparte swamp, Salix cordata and Salix nigra should be added, making eight species in all.

Sarracenia purpurea L.

Two specimens of the pitcher plant were found growing on the margin of the roadbed of the railroad that runs through Bona-

parte swamp. This roadbed is a sandy gravel of which a component part is decomposed crystalline limestone, which is abundant in that vicinity. The plants were only a few inches above the general level of the swamp. Both were in flower, but the flowers were very abnormal. Instead of the usual sepals, petals and stamens, there were numerous oblong or spatulate petaloid organs, green on the inner surface and more or less tinged with reddish brown on the outer. In one there were about 30, in the other about 45 of these pseudopetals. The ovary was imperfectly developed and the usual peltate stigmatic disk was transformed into erect irregular folded or crumpled leaflike lobes. The whole flower was suggestive of a "double blossom" of greenish petals. The unnatural habitat of limestone gravel and sand was the only apparent cause of the transformation. Other plants with flowers of the usual kind were growing near these, but in the soft wet soil of the swamp.

Silene vulgaris (Moench) Garcke

Machias, Cattaraugus co. July. F. E. Fenno. This is a peculiar form having few flowered simple stems and narrowly elliptic or ovate leaves.

Stereum spadiceum Fr.

A form of this species was found near Port Jefferson in which the pilei were crispate complicate as in Stereum complicatum.

Vagnera stellata (L.) Morong

The fruit of the star-flowered Solomon's seal is described in our botanies as sometimes black, and sometimes green with six black stripes. A form was found in Bergen swamp the fruit of which was green with three black stripes.

Viburnum lentago L.

The leaves of this species are described as ovate. A form was found near Delanson, Schenectady co. of which the leaves vary from very broadly ovate to nearly orbicular. Another form was found on Crown Point of which the leaves are oblong and pointed at each end. Its fruit is destitute of bloom and ripens earlier than in the typical form. This may prove worthy of varietal distinction.

Viola palmata dilatata Ell.

Wooded hillside near Saugerties. May. In these specimens some leaves have the broad central lobe, others are not lobed at all. It seems to be intermediate between the variety and an entire leaved form.

Viola papilionacea domestica (Bickn.) Poll.

Streets and waste places of Port Jefferson. August. This so called variety is so unlike the typical form of the species that to most minds it would be far more satisfactory to consider it a distinct species unless there are connecting forms.

EDIBLE FUNGI

Lepiota cepaestipes Sow.

ONION-STEMMED LEPIOTA

PLATE 87, FIG. 1–5

Pileus thin, fleshy in the center, ovate or obtusely conic, becoming campanulate or expanded, broadly umbonate, soon squamulose except in the center, dry, plicate striate on the thin margin, white, the umbo and squamules brownish, flesh white, taste mild; lamellae thin, narrow, close, free, white; stem slender, enlarged toward the base, slightly mealy pruinose or glabrous, stuffed or hollow, white, the slight annulus sometimes evanescent; spores white, .0003–.0004 of an inch long, .0002–.0003 broad.

The onion-stemmed lepiota takes its name from the peculiar shape of the lower part of the stem. There is an enlargement below the middle which gives the stem a shape similar to that of the flowering stem of an onion. The flesh of the cap is thin except in the center where it is thickened into a prominence or umbo. On the margin it is very thin and marked by closely placed radiating furrows or striations with narrow ridges or folds between them. The surface of the cap is covered by a dense flocculent coat or veil which soon breaks into minute scales or points and with the expansion of the cap they give it a roughened or dotted appearance. The veil however remains entire on the umbo and gives it a brownish color. The cap is dry, flexible and slightly tough. The gills are closely placed side by side and do not reach the stem. They are minutely floccose on the edge and white while young and fresh, but they assume a brownish hue with age or in drying, similar to that assumed by the gills of the smooth lepiota, L. naucinoides, under the same conditions.

The stem is rather long and except in the enlarged part is scarcely thicker than the stem of an ordinary tobacco pipe. Occasionally the enlargement is absent and the diameter of the stem is about the same from top to bottom. In the young plant it is stuffed with a webby pith, but usually it becomes hollow with age. The surface is covered with a slight mealiness but this may disappear when the plant is old. It is white or whitish. This mushroom generally

grows in tufts or close clusters in rich soil, tan bark, sawdust or decomposing vegetable matter. It is perhaps found quite as often in greenhouses or conservatories as in the open air. Our specimens were found growing in a bed of decaying sawdust in the open air. The heat generated by the decaying sawdust was doubtless very acceptable to it. A yellow form of the species is said to occur but I have not met with it in my explorations. In my trial of its edible qualities it seemed to me to have an excellent flavor but a slightly tough texture. According to one author "the entire fungus is tender and delicious cooked in any way."

Hygrophorus nitidus B. & C.

SHINING HYGROPHORUS

PLATE 88, FIG. 1–7

Pileus thin, fragile, convex, umbilicate, viscose, pale yellow, shining, and striatulate on the margin when moist, whitish when dry; lamellae arcuate, distant, decurrent, pale yellow; stem slender, viscose, hollow, colored like the pileus; spores broadly elliptic or subglobose, .00025–.0003 of an inch long, .0002-.00025 broad.

The shining hygrophorus is a small species of a beautiful yellow color throughout. Both cap and stem are very viscid and both are fragile. The cap has a conspicuous central depression or umbilicus. When moist, obscure radiating lines may be seen on the margin. These are merely the shadowy appearance of the gills beneath and are due to the thin translucent character of the margin. As the moisture escapes from the cap it becomes whitish and the shadowy lines disappear. The gills are wide apart and their inner end is gradually narrowed and extends downward on the stem. In dried specimens the interspaces are usually wrinkled or venose, specially in large specimens. The stem is rather long in proportion to the size of the cap. It is so viscid and fragile that it is difficult to pull a specimen from the ground without breaking it. In some cases the stem is gradually thickened as it enters the cap. It and the gills usually retain their color longer than the cap.

The cap is rarely more than 1 inch broad; the stem is 1.5-3 inches long and 1-2 lines thick. The species is generally gregarious in its mode of growth, but sometimes it is cespitose. It grows in moist soil full of humus in swamps or low damp places. As an edible mushroom it is not very important because of its small size, but it is tender and agreeable in flavor and may sometimes be convenient to add to a scanty supply of larger species. It is found in July and August.

Hygrophorus laurae decipiens Pk.

DECEIVING HYGROPHORUS

PLATE 88, FIG. 8-11

Pileus thin except in the center, broadly conic with involute margin when young, becoming convex or nearly plane, glutinous, white with a dingy yellow or smoky brown spot in the center, flesh white, taste mild; lamellae subdistant, adnate or decurrent, white; stem rather long, slender, viscid when moist, solid, attenuate at the base, white with white particles at the top; spores .00028-.0003 of an inch long, .00016-.0002 broad.

The deceiving hygrophorus is most closely related to the laura hygrophorus, from which it can scarcely be separated in the fresh or living condition. The thinner flesh of the cap, the more slender stem more constantly narrowed and pointed at the base and its tufted mode of growth are the principal marks of distinction in the fresh plant. It is likely to be taken for a slender tufted form of the laura hygrophorus and the persistency of its colors in drying is the chief reason for considering it a variety of the species instead of a mere form. The cap is 1.5-3 inches broad; the stem 1.5-2 inches long, 3-5 lines thick. It grows in tufts among fallen leaves in woods or their borders, and may be found in September. Its edible character is similar to that of the laura hygrophorus.

Boletus laricinus Berk.

LARCH BOLETUS

PLATE 89, FIG. 1-7

Pileus fleshy, broadly convex or nearly plane, viscid when moist, sometimes squamose, dingy white or grayish white, flesh white; tubes short, adnate or slightly decurrent, whitish when young becoming darker and brown with age, their mouths large, angular, subcompound; stem short, solid, annulate, reticulate above the ring, grayish or brownish below; spores brown, oblong .0004-.0005 of an inch long, .00016-.0002 broad.

The larch boletus takes its name from its place of growth. It always grows under or near larchtrees. It is closely related to the Elba boletus, B. elbensis Pk., which is found under or near tamarack trees in the northern part of our State. In the larch boletus the cap is paler and has no pinkish brown tint which often is seen on the cap of the Elba boletus. Its cap is sometimes adorned by brown or blackish scales which are easily rubbed or washed away, leaving the whitish cap entirely naked. The flesh is soft and white or whitish. The tubes are at first whitish but they change

with age to brownish and then to a dark sepia color. The mouths are large and angular. In some cases shorter dissepiments within the larger tubes give them the appearance of being composed of two or more smaller ones. The tube walls extend downward on the stem to the ring and by anastomosing give the reticulated appearance called cribrose in the older descriptions. This is one of the distinguishing characters between the larch boletus and the Elba boletus. I have not yet tested the edible qualities of the latter, but the former is worthy of a place among our esculent species. It was collected in October.

Boletus rubropunctus Pk.

RED DOTTED BOLETUS

PLATE 90, FIG. 1-9

Pileus fleshy, very convex or broadly convex, glabrous, viscid and shining when moist, variable in color, pale red, crimson or bay red, flesh white; tubes plane or convex in the mass, depressed around the stem, their mouths small, round, pale yellow when young, becoming bright golden yellow; stem equal or slightly thickened toward the base, solid, punctate or minutely squamulose with red or pallid points, pallid or tinged with red; spores oblong fusiform, .0005-.0007 of an inch long, .0002-.00024 broad.

The red dotted boletus is a very variable species. The cap is strongly or slightly convex, smooth and shining, viscid when moist and covered with a thin tenacious pellicle which can be torn away like the skin from an overripe peach. In the young plant the thin margin sometimes extends a little beyond the mass of tubes. In color the cap may be pale red, bright red or crimson, reddish brown or chestnut color. The flesh is whitish, sometimes tinged with yellow. The tubes are plane or convex in the mass, depressed around the stem, pale yellow when young, becoming bright golden yellow with age. Their mouths are small and round. The stem is rather long and slender for the size of the cap, solid, equal in diameter in all its parts or sometimes slightly thicker at the base. It is marked with numerous small dots or points of a red, brownish or pallid color which at first sight suggests a similarity to the stem of a small specimen of Boletus scaber. The color of the stem may be whitish, pallid or reddish. The species is related to Boletus inflexus Pk. but it differs from it in having its tubes depressed about the stem, in its tube mouths being destitute of red granules and in its larger spores.

The cap is 1-2.5 inches broad; the stem is 1-3 inches long, 2-4 lines thick. It occurs in thin woods in July and August.

Boletus nobilis Pk. n. sp.

NOBLE BOLETUS

PLATE 91, FIG. 1-4

Pileus firm, convex, dry, glabrous, yellowish brown or reddish brown when young, becoming ochraceous or reddish ochraceous with age, flesh white, taste mild; tubes white and stuffed when young, becoming yellow or pale ochraceous with age, nearly plane in the mass, adnate or slightly depressed around the stem, the mouths small, round; stem equal or slightly thicker at the base, solid, glabrous, generally reticulated at the top, whitish or pallid; spores oblong fusiform, .0005-.0006 of an inch long, .0002-.0002½ broad.

This large and fine species grows singly or in groups in thin woods and in cleared or bushy places. It belongs to the section Edules. It differs from the edible boletus, B. edulis in its tubes being less depressed around the stem and in having no green tint. From the related boletus, B. affinis, to which it is also closely allied, it is separated by its larger size, the paler color of the cap, the paler stem and its larger spores. The flesh is thin for the size of the cap and is yellowish next the tubes. The cap is 4-8 inches broad; the stem 3-6 inches long, 6-10 lines thick. It may be found in August. In preparing it for cooking the long tubes should be removed from the cap and be rejected with the stem.

Strobilomyces strobilaceus (Scop.) Berk.

CONELIKE BOLETUS

PLATE 92, FIG. 1-6

Pileus fleshy, firm, subglobose, hemispheric or convex, dry, covered with a dense thick coat of blackish or blackish brown tomentum which separates into prominent tufts or scales with intervening chinks or spaces of a pale gray or smoky white color, flesh whitish, changing to reddish on exposure to the air, then to blackish, tubes rather long, depressed around the stem, plane or convex in the mass, whitish when young and fresh, becoming red where wounded and then blackish, also becoming blackish or blackish brown with age; stem equal or tapering upward, solid, often sulcate at the top, covered with a tomentum similar to that of the pileus; spores blackish brown, globose or nearly so, rough, .0004-.0005 of an inch in diameter.

This boletus has such a peculiar shaggy appearance and blackish color and is so unlike any other mushroom in our flora that

it is scarcely possible to confuse it with any other. It grows in woods or their borders, generally only a few in place. The cap is usually 2-4 inches broad; the stem 2-5 inches long, 4-8 lines thick. It may be found from July to September. In preparing it for cooking use only the flesh of the caps, peeling away the tomentum from the upper surface and removing the somewhat tenacious tubes from the lower surface. It is harmless and though it may not be considered a first class mushroom for eating purposes, it is much better than none.

Clavaria botrytoides Pk. n. sp.

GRAPELIKE CLAVARIA

PLATE 93, FIG. 5-7

Stem small, short, divided near the base into branches which are repeatedly and irregularly branched, the ultimate branches short, crowded, blunt, usually terminating in two or more blunt teeth or protuberances, red or pink at the tips when young, soon fading and becoming concolorous, stem and branches solid, flesh white, taste mild; spores narrowly elliptic or oblong, rusty brown or subcinnamon, .0003-.0004 of an inch long, .00016-.0002 broad.

The grapelike clavaria is very closely related to the red tipped clavaria and probably has been confused with it. It may be separated from that species by its thinner stem, the fading or evanescent character of the color of the ultimate branchlets and by its shorter and differently colored spores. The tips of the branches in mature or old plants are whitish like the branches themselves, but often a few small branches may be found near the base of the plant which have red tips and are therefore presumably of later development. It is possible that these two clavarias have been confused in Europe for European mycologists do not agree in their description of the spore characters of the red tipped clavaria. Stevenson describes them as subhyaline, 12-15 μ long, 6 μ broad. Massee describes them as white, 8 μ long, 5 μ broad. In our plant the spores in mass have a rusty brownish or subcinnamon color when collected on white paper and they are 8-10 μ long, 4-5 μ broad.

The plants are 2-4 inches tall and 1.5-3 inches broad. They grow in thin woods on rather poor soil and may be found in August and September. The edible qualities seem to me to be similar to those of the red tipped clavaria.

Clavaria pistillaris L.

LARGE CLUB CLAVARIA

PLATE 93, FIG. 1-4

Club simple, large, soft, fleshy, glabrous, clavate or oblong clavate, obtuse, solid or slightly spongy within, even or nearly so, ochraceous buff, flesh white, taste mild; spores elliptic, .0004-.0005 of an inch long, .0002-.00024 broad.

The large club clavaria is not very common and is quite variable in size and shape. It is usually 2-6 inches long and 6-12 lines thick. Sometimes the club gradually enlarges from base to top, again it is swollen at the base and at the top or it may be nearly cylindric in the lower half and gradually enlarged upward in the upper half. Large thick specimens are sometimes cracked at the top, revealing the white flesh. The color is sometimes yellowish, sometimes ochraceous buff or tan color. It is often more highly colored at the top than toward the base. The plant is generally clean and free from the attacks of insects. It usually grows in a scattered manner, only a few specimens being found in a place, but occasionally it may form tufts of two or three plants. It grows in woods and may be found from August to September. The species is easily recognized and is not likely to be mistaken for any harmful mushroom. It is similar in its texture and flavor to the umbonate clavaria, C. pistillaris umbonata.

EXPLANATION OF PLATES

PLATE P

Cortinarius heliotropicus Pk.

HELIOTROPE CORTINARIUS

1 Immature plant with unexpanded pileus
2 Immature plant with expanded pileus
3 Mature plant with unspotted pileus
4 Mature plant with spotted pileus
5 Vertical section of the upper part of an immature plant
6 Vertical section of the upper part of a mature plant
7 Four spores, x 400

Pholiota appendiculata Pk.

APPENDICULATE PHOLIOTA

8 Young plant showing unbroken veil beneath the pileus
9 Young plant showing stem and pileus
10, 11 Two immature plants, one showing lamellae beneath the pileus

12, 13 Two mature plants, one showing lamellae beneath the pileus
14, 15 Vertical sections of two young plants
16 Vertical section of the upper part of a mature plant
17 Four spores, x 400

PLATE Q

Lactarius brevis Pk.

SHORT LACTARIUS

1 Young plant
2 Mature plant with convex pileus
3 Mature plant with fully expanded pileus
4 Vertical section of a plant showing the color which the flesh soon assumes on exposure to the air
5 Four spores, x 400

Boletus rugosiceps Pk.

ROUGH CAP BOLETUS

6 Young plant showing small pileus and large stem
7 Immature plant showing pale yellow tubes
8 Mature plant
9 Vertical section of the upper part of a plant
10 Four spores, x 400

PLATE R

Boletus atkinsoni Pk.

ATKINSON'S BOLETUS

1 Immature plant
2 Mature plant
3 Vertical section of the upper part of an immature plant
4 Vertical section of the upper part of a mature plant
5 Four spores, x 400

PLATE 87

Lepiota cepaestipes Sow.

ONION-STEMMED LEPIOTA

1 Cluster of three young plants
2 Cluster of six plants, four of them with caps mature
3 Vertical section of the upper part of a plant
4 Transverse section of a stem
5 Four spores, x 400

PLATE 88

Hygrophorus nitidus B. & C.

SHINING HYGROPHORUS

1, 2 Two plants with moist yellow caps
3, 4 Two plants after the excess of moisture has escaped
5 Vertical section of the upper part of a plant
6 Transverse section of a stem
7 Four spores, x 400

Hygrophorus laurae decipiens Pk.

DECEIVING HYGROPHORUS

8 Cluster of five plants with moist caps
9 One plant after the excess of moisture has escaped. The lower part of the stem has been removed
10 Vertical section of the upper part of a plant
11 Four spores, x 400

PLATE 89

Boletus laricinus Berk.

LARCH BOLETUS

1, 2 Two small young plants showing scales on the caps
3 One small but mature plant with no scales on the cap
4, 5 Two mature plants of usual size
6 Vertical section of the upper part of a plant
7 Four spores, x 400

PLATE 90

Boletus rubropunctus Pk.

RED DOTTED BOLETUS

1, 2 Two immature plants with red caps and reddish stems
3 An immature plant with paler cap and stem
4, 5, 6 Three mature plants
7 Vertical section of the upper part of an immature plant
8 Vertical section of the upper part of a mature plant
9 Four spores, x 400

PLATE 91

Boletus nobilis Pk.

NOBLE BOLETUS

1 An immature small plant
2 A mature plant of medium size
3 Vertical section of the upper part of a plant
4 Four spores, x 400

PLATE 92

Strobilomyces strobilaceus (Scop.) Berk.

CONELIKE BOLETUS

1 A small immature plant
2 A larger immature plant showing the whitish tube mouths
3 A mature plant of medium size
4 Vertical section of the upper part of an immature plant
5 Vertical section of the upper part of a mature plant
6 Four spores, x 400

PLATE 93

Clavaria pistillaris L.

LARGE CLUB CLAVARIA

1, 2 Two plants, one showing cracks in the apex
3 Vertical section of a plant
4 Four spores, x 400

Clavaria botrytoides Pk.

GRAPELIKE CLAVARIA

5 Immature plant with tips of branchlets red
6 Mature plant with most of the tips colored like the branches
7 Four spores, x 400

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Museum annual reports 1847–date. *All in print to 1892, 50c a volume, 75c in cloth; 1892–date, 75c, cloth.*

These reports are made up of the reports of the director, geologist, paleontologist, botanist and entomologist, and museum bulletins and memoirs, issued as advance sections of the reports.

Geologist's annual reports 1881–date. Rep'ts 1, 3–13, 17–date, O; 2, 14–16, Q.

The annual reports of the early natural history survey, 1837–41, are out of print.

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In 1898 the paleontologic work of the State was made distinct from the geologic and was reported separately from 1899–1903. The two departments were reunited in 1904.

Paleontologist's annual reports 1899–1903.

See fourth note under Geologist's annual reports.

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Reports 3–19 bound also with museum reports 40–46, 48–57 of which they form a part. Since 1898 these reports have been issued as bulletins. Reports 3–4 are out of print, other reports with prices are:

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1	$.50	9	$.25	15 (En 9)	$.15
2	.30	10	.35	16 (" 10)	.25
5	.25	11	.25	17 (" 14)	.30
6	.15	12	.25	18 (" 17)	.20
7	.20	13	.10	19 (" 21)	.15
8	.25	14 (En 5)	.20	20 *In press*	

Reports 2, 8–12 may also be obtained bound separately in cloth at 25c in addition to the price given above.

Botanist's annual reports 1867–date.

Bound also with museum reports 21–date of which they form a part; the first botanist's report appeared in the 21st museum report and is numbered 21. Reports 21–24, 29, 31–41 were not published separately.

Separate reports 25–28, 30, 42–50 and 52 (Botany 3) are out of print. Report 51 may be had for 40c; 53 for 20c; 54 for 50c. Since the 55th these reports have been issued as bulletins.

Descriptions and illustrations of edible, poisonous and unwholesome fungi of New York have been published in volumes 1 and 3 of the 48th museum report and in volume 1 of the 49th, 51st, 52d, 54th and 55th reports. The descriptions and illustrations of edible and unwholesome species contained in the 49th, 51st and 52d reports have been revised and rearranged, and, combined with others more recently prepared, constitute Museum memoir 4.

Museum bulletins 1887–date. O. *To advance subscribers, $2 a year or 50c a year for those of any one division:* (1) *geology, economic geology, mineralogy,* (2) *general zoology, archeology and miscellaneous,* (3) *paleontology,* (4) *botany,* (5) *entomology.*

Bulletins are also found with the annual reports of the museum as follows:

Bulletin		*Report*	*Bulletin*		*Report*	*Bulletin*		*Report*	*Bulletin*		*Report*
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	3	52, v.1		4	" v.4		11	" v.3		5	" v.3
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	5	56, v.1		7–9	56, v.2		14	55, v.1		7	56, v.4
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	7	50, v.1		4	54, v.1	Bo	3	52, v.1			
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	9	54, v.2		8	55, v.1		5	55, v.1		2	49, v.3
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M	2	" v.1		4–6	52, v.1		2	51, v.1			

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G2 (19) Merrill, F: J. H. Guide to the Study of the Geological Collections of the New York State Museum. 162p. 119pl. map. Nov. 1898. [50c]

G3 (21) Kemp, J. F. Geology of the Lake Placid Region. 24p. 1pl. map. Sep. 1898. *5c.*

G4 (48) Woodworth, J. B. Pleistocene Geology of Nassau County and Borough of Queens. 58p. il. 9pl. map. Dec. 1901. *25c.*

G5 (56) Merrill, F: J. H. Description of the State Geologic Map of 1901. 42p. 2 maps, tab. Oct. 1902. *10c.*

G6 (77) Cushing, H. P. Geology of the Vicinity of Little Falls, Herkimer Co. 98p. il. 15pl. 2 maps. Jan. 1905. *30c.*

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——Dictyonine Hexactinellid Sponges from the Upper Devonic of New York.
——The Water Biscuit of Squaw Island, Canandaigua Lake, N. Y.
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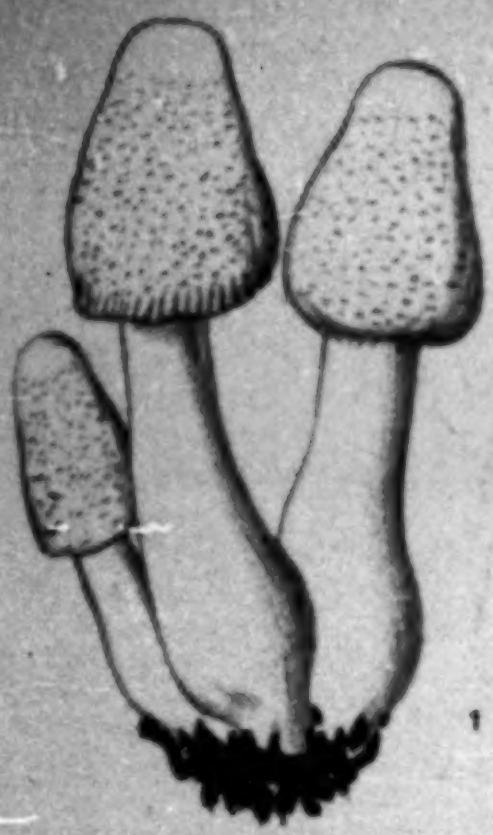
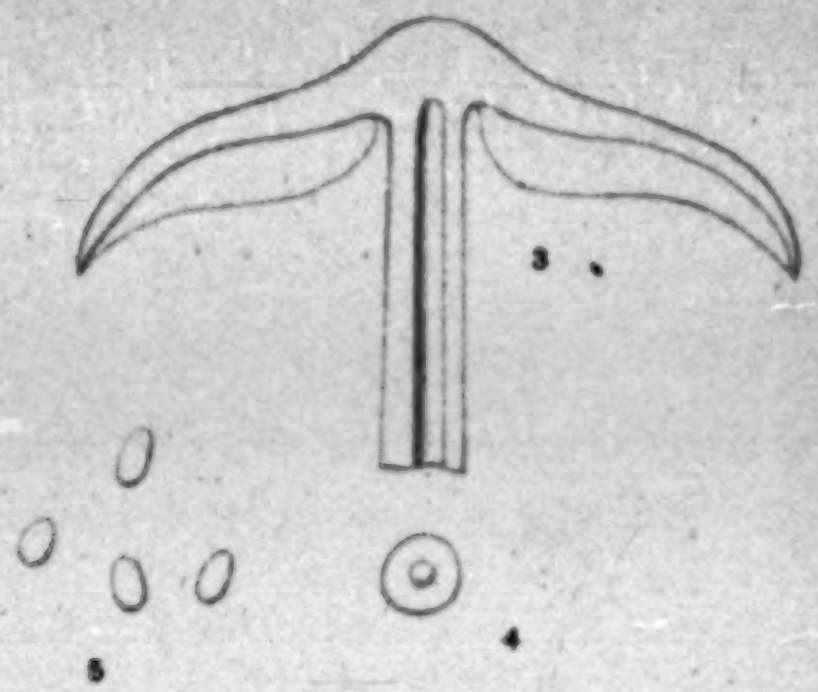
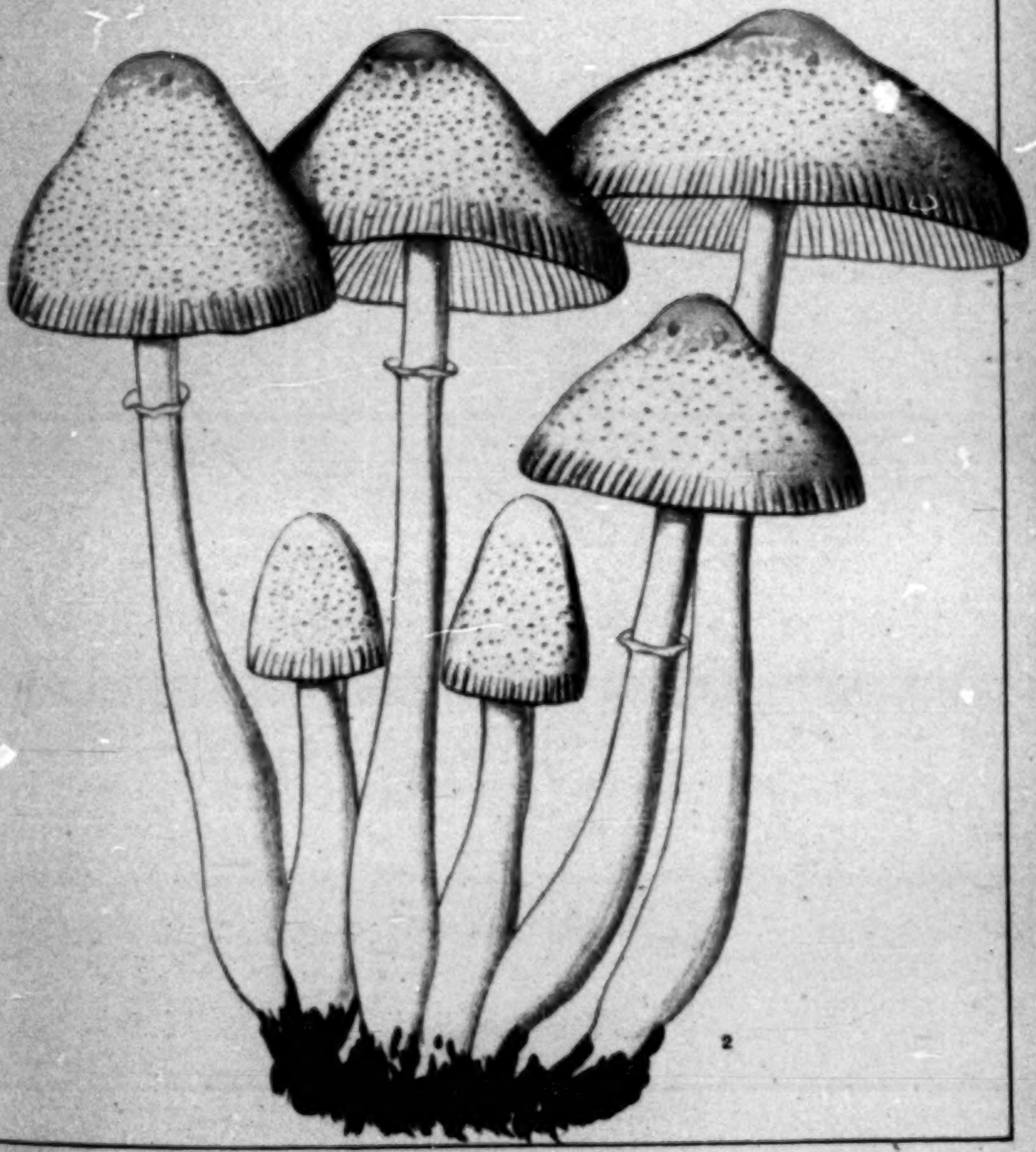






LEPIOTA CEPAESTIPES SOW.

ONION-STEMMED LEPIOTA

EDIBLE FUNGI

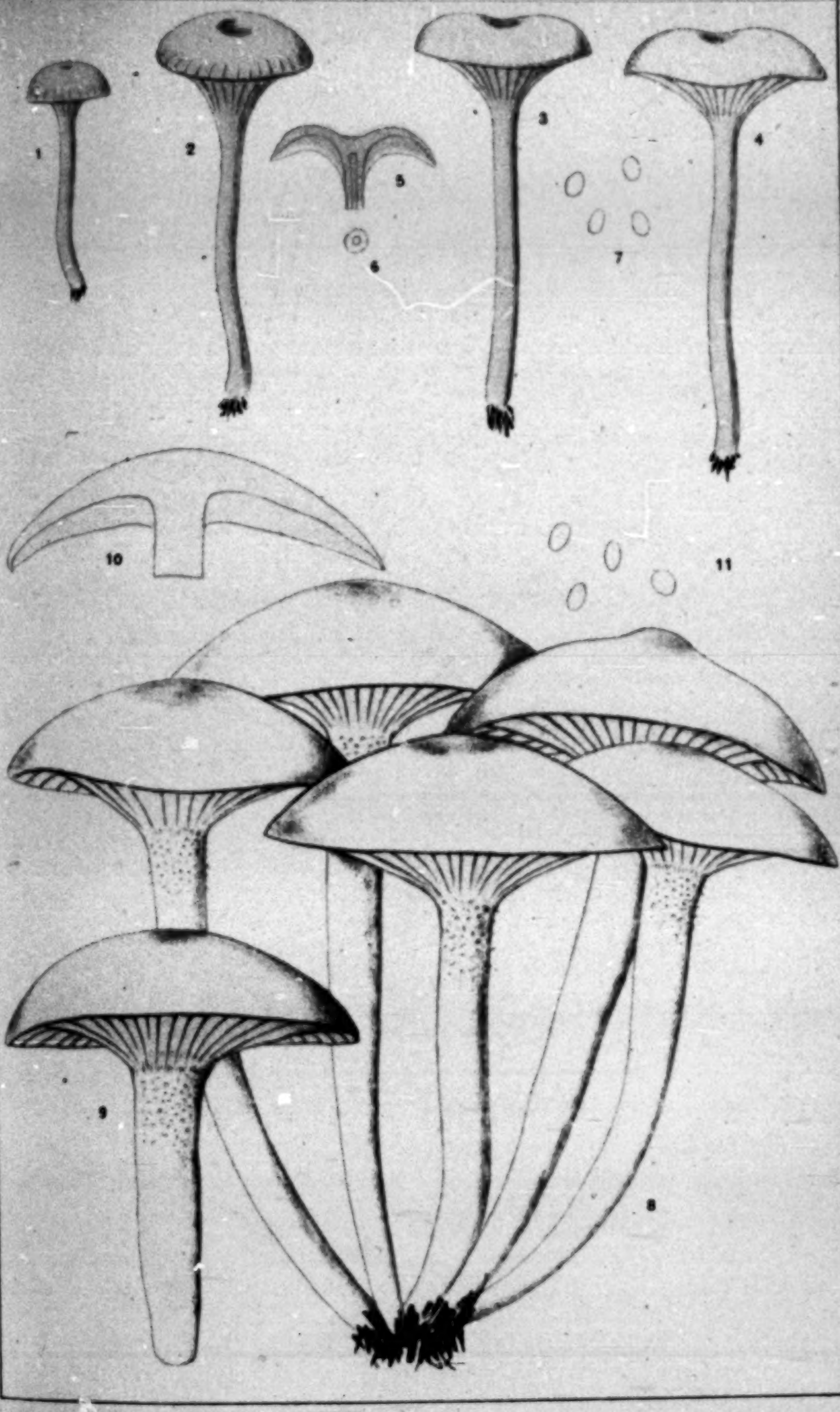
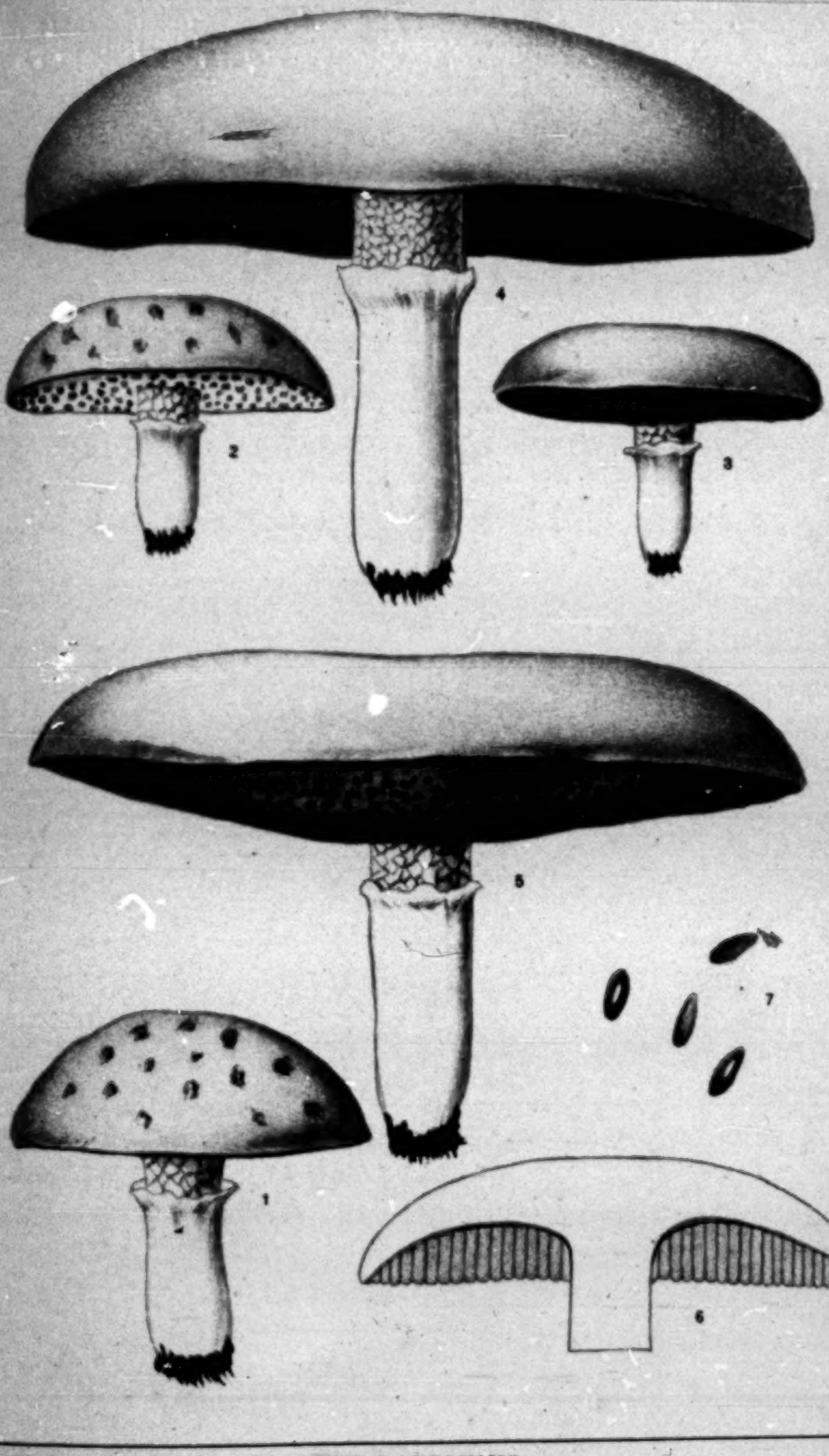


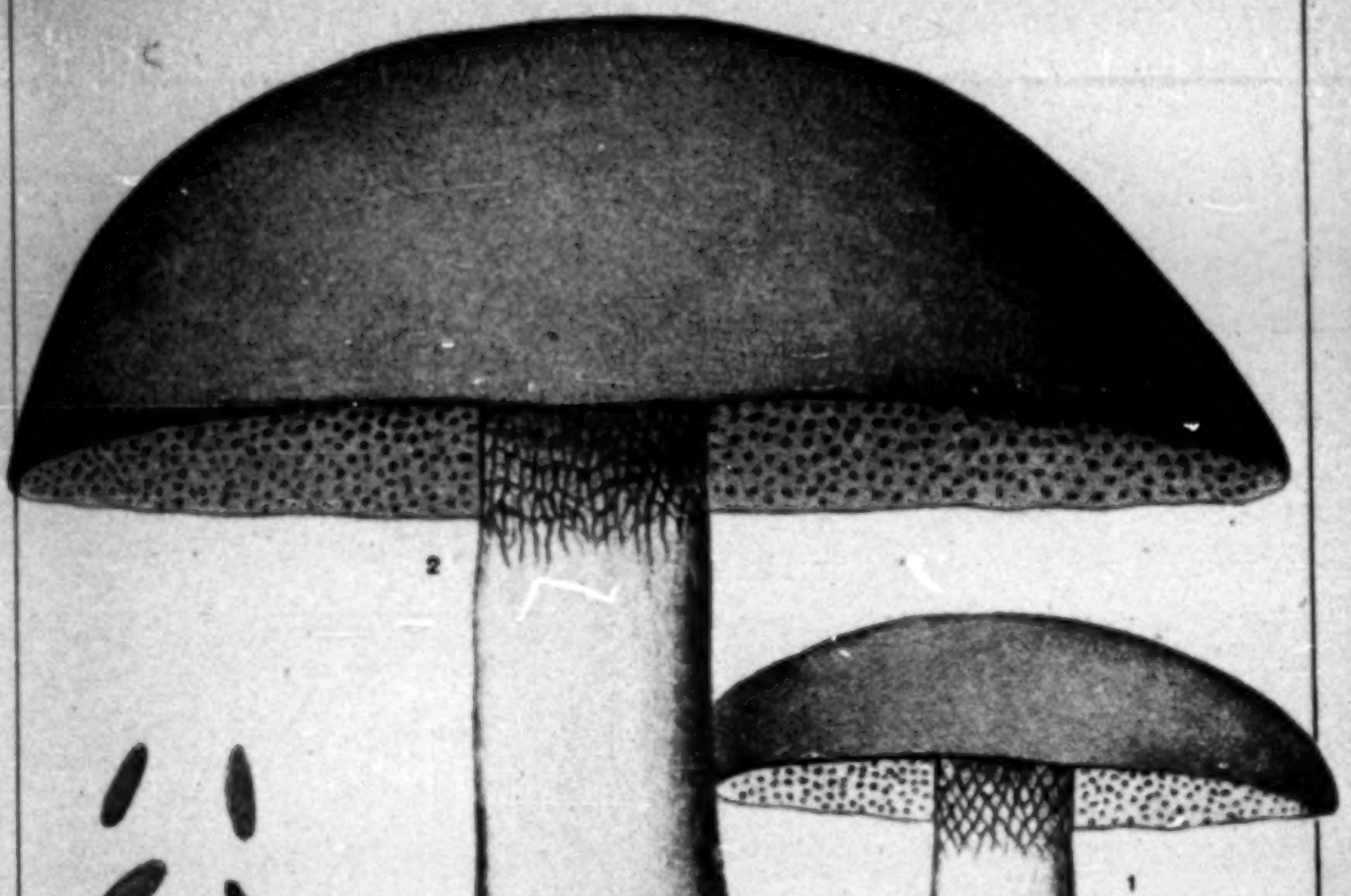
FIG. 1-7 HYGROPHORUS NITIDUS B.&C. SHINING HYGROPHORUS

FIG. 8-11 H. LAURAE DECIPIENS PK. DECEIVING HYGROPHORUS



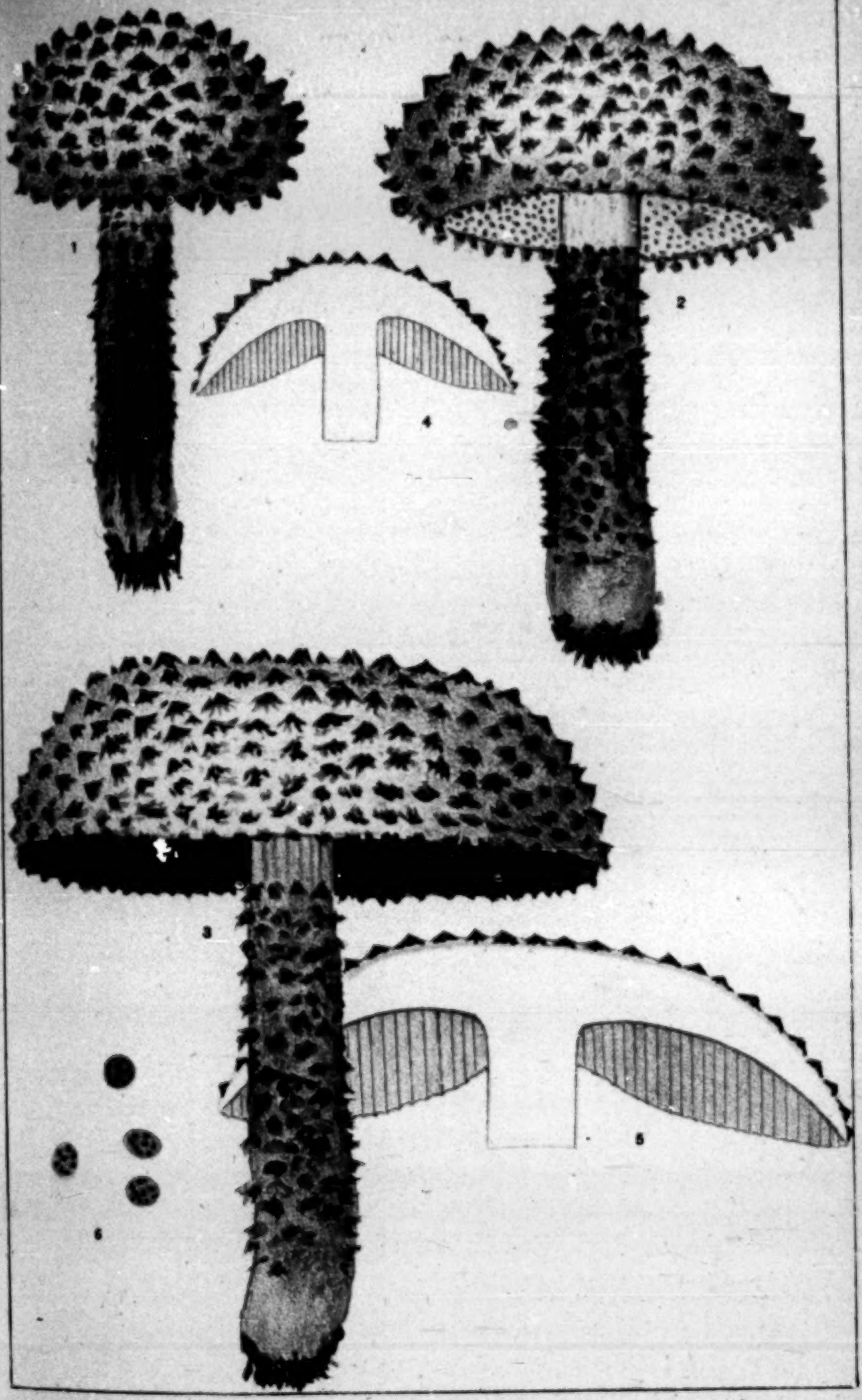
BOLETUS LARICINUS BERK.
LARCH BOLETUS

BOLETUS RUBROPUNCTUS PK.
RED DOTTED BOLETUS



BOLETUS NOBILIS PK.

NOBLE BOLETUS



STROBILOMYCES STROBILACEUS (SCOP.) BERK.

CONE-LIKE BOLETUS

EDIBLE FUNGI

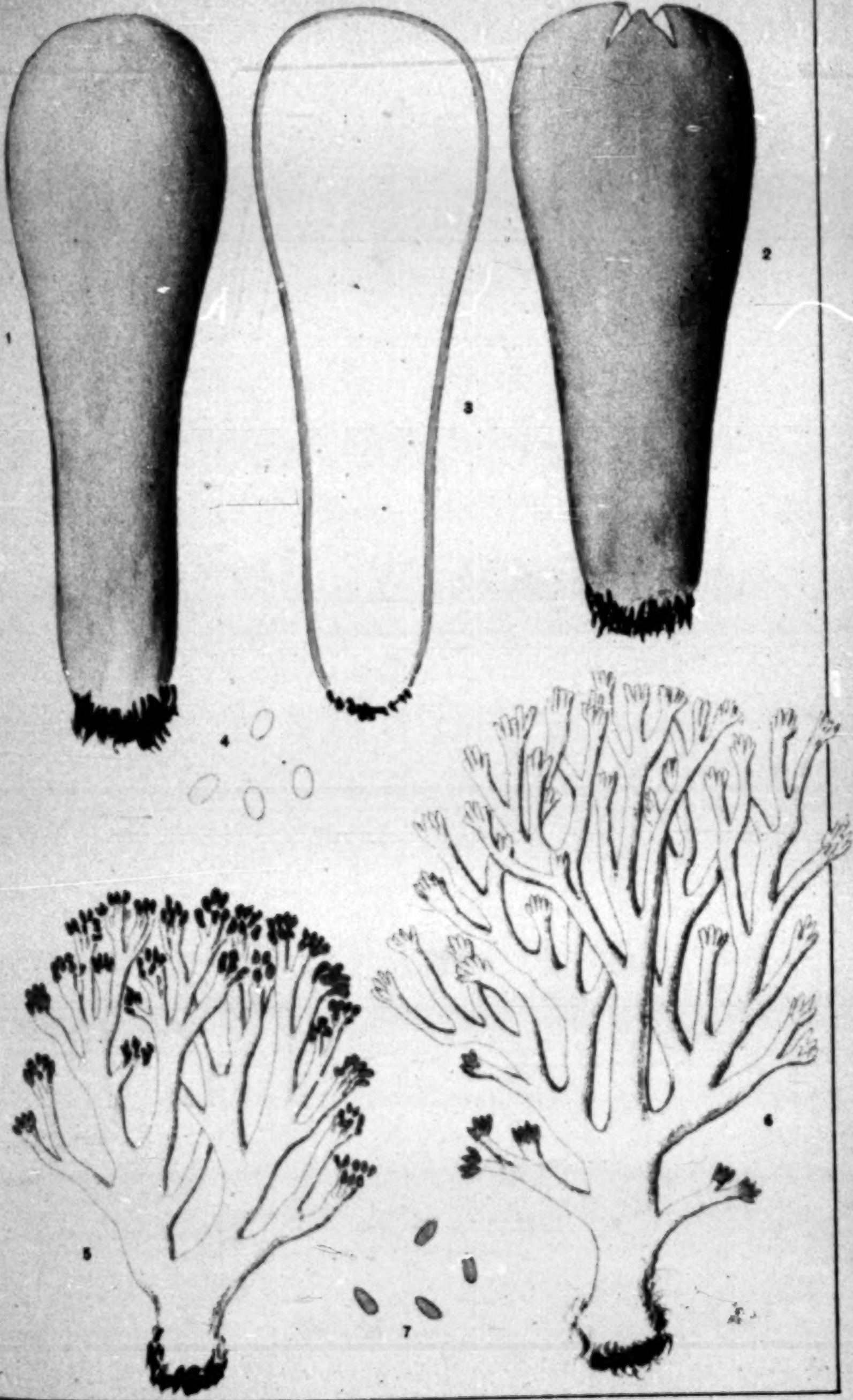


FIG. 1-4 CLAVARIA PISTILLARIS L.
LARGE CLUB CLAVARIA

FIG. 5-7 C. BOTRYTOIDES PK.
GRAPE-LIKE CLAVARIA

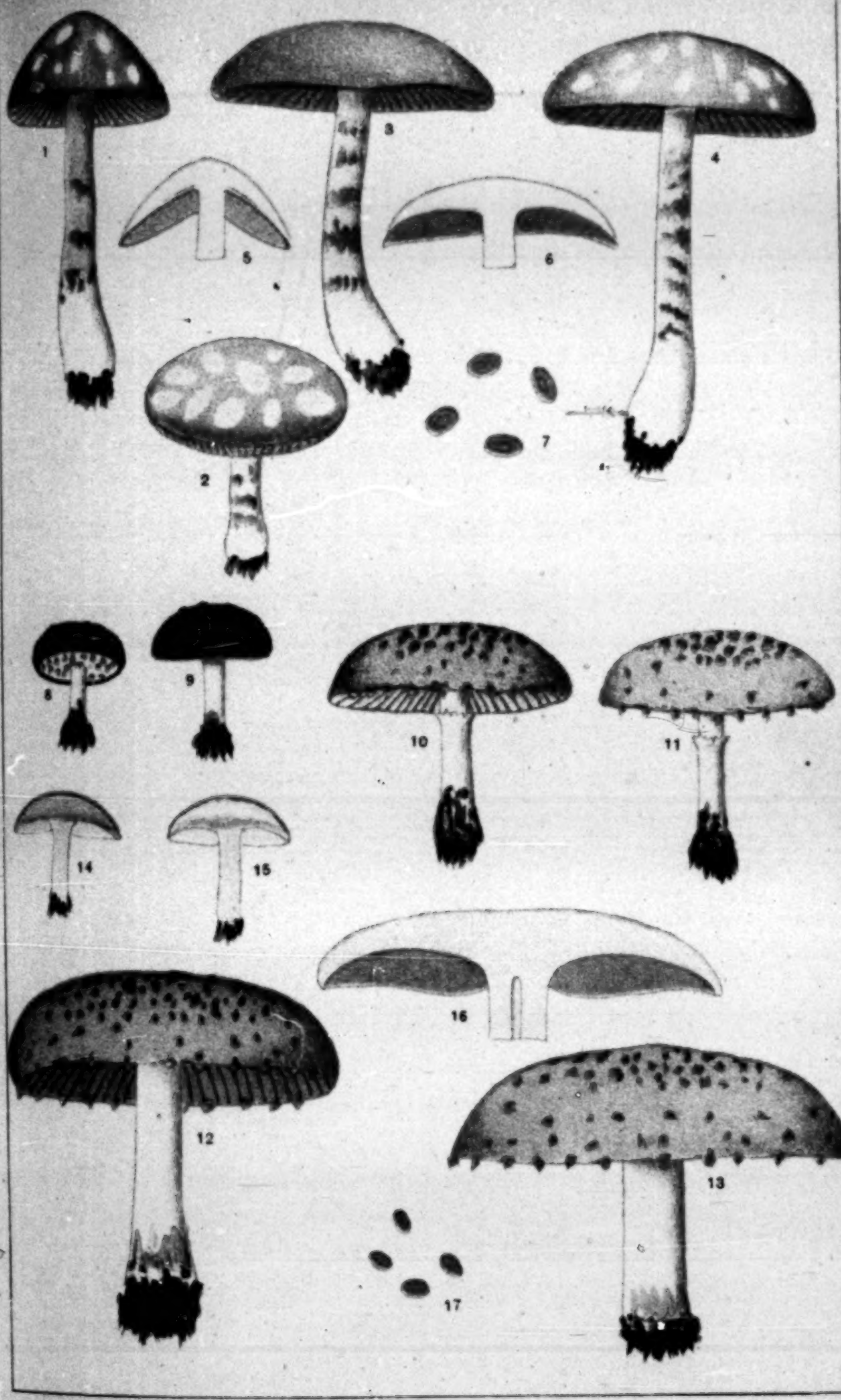


Fig. 1-7 CORTINARIUS HELIOTROPICUS PK. Fig. 8-17 PHOLIOTA APPENDICULATA PK.

HELIOTROPE CORTINARIUS APPENDICULATE PHOLIOTA

FUNGI

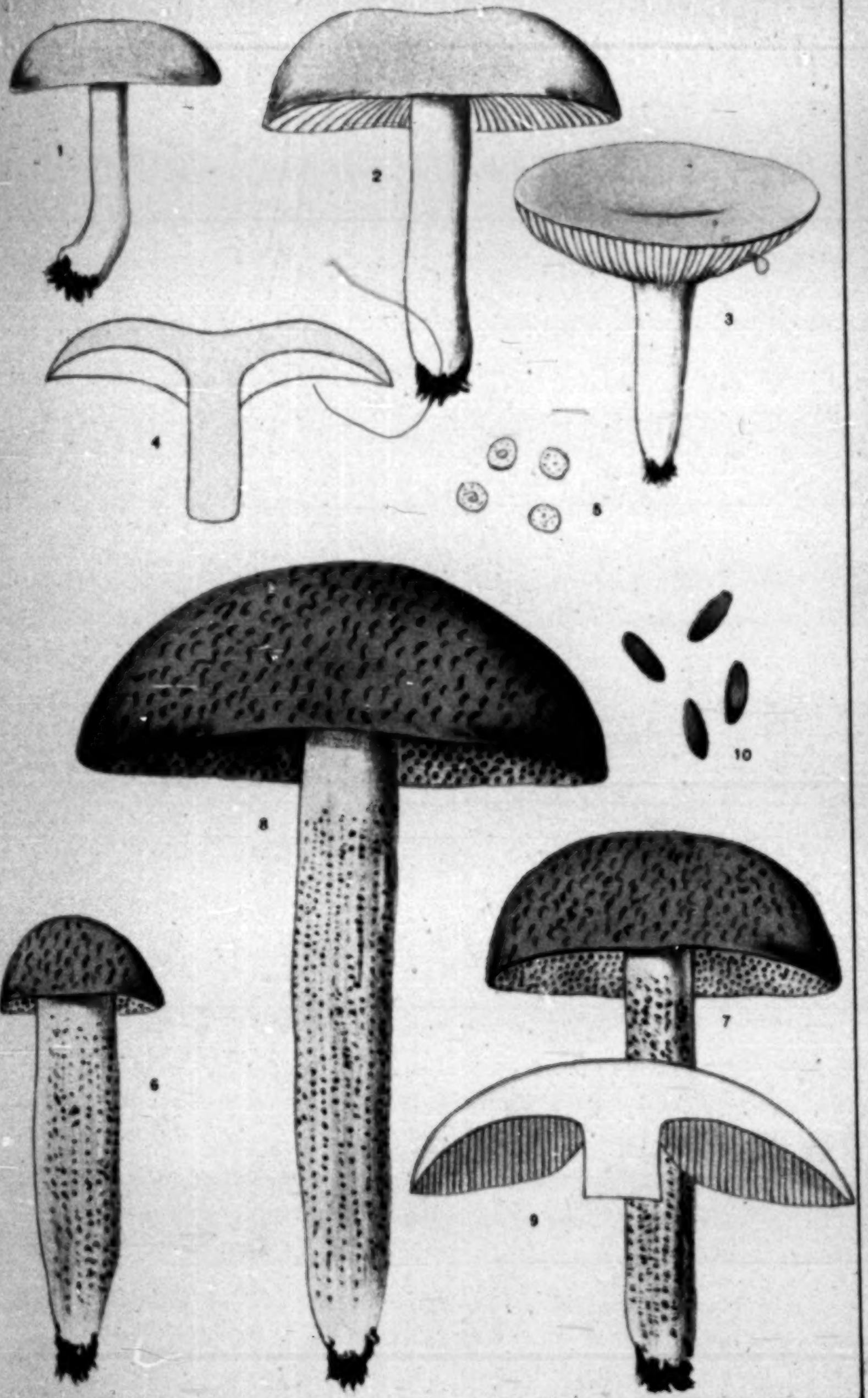
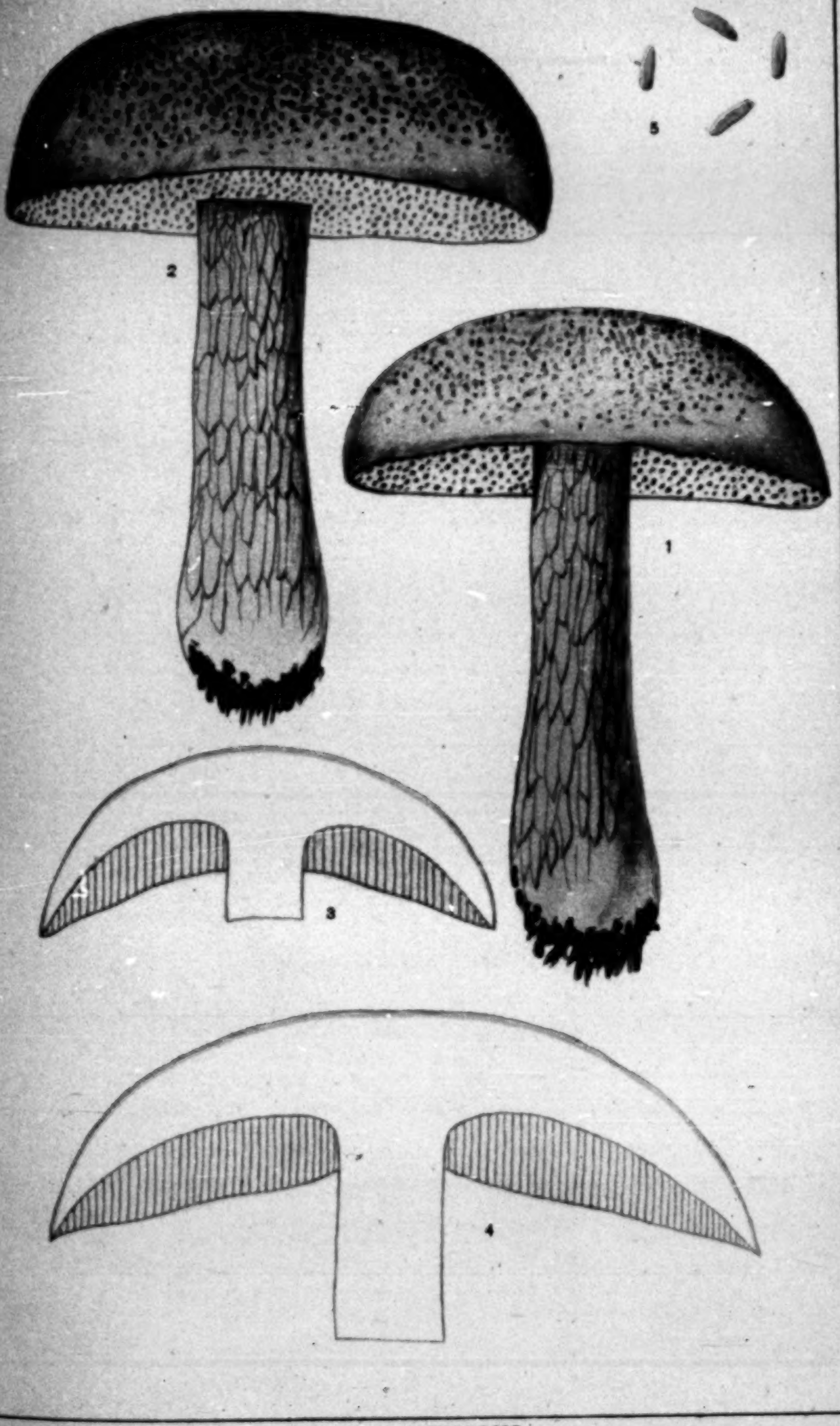


FIG. 1-5 LACTARIUS BREVIS PK.
SHORT LACTARIUS

FIG. 3-10 BOLETUS RUGOSICEPS PK.
ROUGH CAP BOLETUS



BOLETUS ATKINSONI PK.

ATKINSON'S BOLETUS

1905

New York State Education Department

New York State Museum

JOHN M. CLARKE Director
CHARLES H. PECK State Botanist

Bulletin 105

BOTANY 9

REPORT OF THE STATE BOTANIST 1905

To John M. Clarke, Director of Science Division:

I have the honor of submitting to you the following report of work done in the botanical department of the State Museum during the year 1905.

Specimens of plants for the State herbarium have been collected in the counties of Albany, Allegany, Essex, Livingston, Rensselaer, Saratoga, Steuben, Suffolk, Warren and Wyoming. Specimens have been contributed that were collected in the counties of Albany, Chautauqua, Columbia, Fulton, Herkimer, Monroe, Oneida, Onondaga, Orleans, Oswego, Queens, Rensselaer, Suffolk, Tompkins, Warren, Washington, Wayne and Westchester. Specimens have also been contributed or sent for identification that were collected in the states of California, Connecticut, Indiana, Iowa, Maine, Maryland, Massachusetts, Michigan, Minnesota, Missouri, Nebraska, New Jersey, North Carolina, Pennsylvania and Virginia; also in the District of Columbia, and in the country of Mexico and the provinces of Alberta, British Columbia, New Brunswick and Ontario.

The number of New York species added to the herbarium is 277. Of these, 76 are new to the herbarium. A list of the names of these species may be found under the title "Plants added to the herbarium."

The number of contributions received, including specimens sent for identification, when their character and condition was such as to make their preservation desirable, is 63. A list of the names of the contributors and their respective contributions is given under the title "Contributors and their contributions."

One of the most notable of these contributions consists of a bell jar containing about 6 quarts of dried specimens of an edible

mushroom which is found in China and Japan growing on oak branches. A cabinet case about 4 feet long and 2 feet wide, containing four oak branches bearing specimens of the mushroom in place and showing their mode of growth, forms a part of the contribution. There are certain marks on the branches indicating that the mushroom is cultivated. These specimens had been on exhibition at the Louisiana Purchase Exposition at St Louis and at the close of the fair they were presented to the New York State herbarium by the Osaka Mushroom Merchants Association. The botanical name of the mushroom is Pleurotus bretschneideri, the common Japanese name is Shiitake.

The number of species added to the flora of the State is 82. Some of these have before been recorded as varieties of various species, but recently they have been raised to specific rank and they are herein reported as species. Of the 82 additions, 41 are considered new species and are described as such in this report. Of the new species, 19 belong to the genus Crataegus and are described in a chapter entitled "Species of Crataegus found within 20 miles of Albany." The remaining 22 are fungi. A chapter on species not before reported contains the names of the species new to our flora, descriptions of the new species not elsewhere described in this report and remarks concerning the others with the names of the places where and the times when the specimens were collected.

A record of new stations of rare plants and of persistence in old stations, descriptions of new varieties and remarks concerning peculiar and distinguishing features of closely related species may be found under the title "Remarks and observations." In this chapter 38 species are noticed.

The investigation of our species of Crataegus has been continued. In the study of our species in the vicinity of Albany I deem myself fortunate in having had the expert aid of Prof. C. S. Sargent, our highest authority on this, our largest and most difficult genus of trees and shrubs. He has visited with me some of the most prolific and interesting localities and personally examined the trees and shrubs in their place of growth and has kindly identified others from specimens sent him. He has named and described the new species reported in the chapter on species of Crataegus found within 20 miles of Albany and has prepared the bibliographic references of the others. Specimens collected in other parts of the State have not yet been fully identified. The number of species of this genus already identified and known to belong to our flora is 89.

The number of species of plants identified for correspondents and others who have sent or brought specimens to the office of the Botanist for this purpose is 601. The number of persons for whom identifications have been made is 86.

The work of testing our wild mushrooms for their edible qualities has been continued. The number of species tried and approved is 11. Descriptions of these have been written and constitute a chapter on edible fungi. They are illustrated on 10 plates by colored figures of natural size. Similar figures of four new species of fungi have been prepared on two plates. The number of species and varieties of New York edible mushrooms figured and described up to the present time is 172.

Mr Stewart H. Burnham was employed as temporary assistant during July, August and September. He continued the work begun by him last year and was chiefly engaged in disinfecting, arranging and labeling specimens. He also assisted in conducting the correspondence of the office and in the identification of specimens sent by correspondents.

Respectfully submitted

CHARLES H. PECK
State Botanist

Office of the State Botanist
Albany October 1, 1905

SPECIES ADDED TO THE HERBARIUM

New to the herbarium

Aecidium trientalis *Trans.*
Anthostoma gastrina (*Fr.*) *Sacc.*
Boletus acidus *Pk.*
Clavaria conjuncta *Pk.*
Clitopilus squamulosus *Pk.*
Coccospora aurantiaca *Wallr.*
Cortinarius rubripes *Pk.*
Crataegus acuminata *Sarg.*
C. ambrosia *Sarg.*
C. asperifolia *Sarg.*
C. beckiana *Sarg.*
C. casta *Sarg.*
C. caesariata *Sarg.*
C. conspicua *Sarg.*
C. contortifolia *Sarg.*
C. demissa *Sarg.*
C. divergens *Sarg.*
C. eatoniana *Sarg.*
C. edsoni *Sarg.*
C. flagrans *Sarg.*
C. genialis *Sarg.*
C. halliana *Sarg.*
C. helderbergensis *S.*
C. howeana *Sarg.*
C. hystricina *Ashe*
C. illuminata *Sarg.*
C. mellita *Sarg.*
C. menandiana *Sarg.*
C. oblongifolia *Sarg.*
C. peckietta *Sarg.*
C. pentandra *Sarg.*
C. polita *Sarg.*
C. rhombifolia *Sarg.*
C. robbinsiana *Sarg.*
C. rubrocarnea *Sarg.*
C. sejuncta *Sarg.*
Entoloma flavifolium *Pk.*
Erinella raphidospora (*Ellis*)
Exoascus cecidomophilus *Atk.*
Geopyxis nebulosa (*Cke.*) *Sacc.*
Geranium sibiricum *L.*
Gloeosporium riessii *S. & S.*
Hydnum cyaneotinctum *Pk.*
Hypomyces camphorati *Pk.*
H. lateritius (*Fr.*) *Tul.*
Inocybe diminuta *Pk.*
I. radiata *Pk.*
Lachnella flammea (*A. & S.*) *Fr.*
Lactarius rimosellus *Pk.*
Lentinus spretus *Pk.*
Leptosphaeria substerilis *Pk.*
Marasmius longistriatus *Pk.*
Melanogaster durissimus *Cke.*
Melanthium latifolium *Desr.*
Merulius pruni *Pk.*
M. ulmi *Pk.*
Oligonema nitens (*Lib.*) *Rost.*
Panus fulvidus *Bres.*
Perichaena quadrata *Macb.*
Phyllosticta pallidior *Pk.*
Physoderma menyanthis *DeBy.*
Pluteus grandis *Pk.*
Polyporus underwoodii *Murr.*
Psathyra vestita *Pk.*
Russula subsordida *Pk.*
R. viridella *Pk.*
Sporotrichum anthophilum *Pk.*
Stropharia melasperma (*Bull.*)
Tilmadoche compacta *Wing.*
Tricholoma paeonium *Fr.*
T. unifactum *Pk.*
Uredinopsis atkinsoni *Magn.*
U. osmundae *Magn.*
Verbascum phlomoides *L.*
Veronica chamaedrys *L.*
Zygodesmus pallidofulvus *Pk.*

Not new to the herbarium

Acer pennsylvanicum *L.*
A. saccharum *L.*
Aecidium pentstemonis *Schw.*
Agaricus abruptibulbus *Pk.*
A. arvensis *Schaeff.*
A. campester *L.*
Amanita frostiana *Pk.*
A. phalloides *Fr.*
A. rubescens *Fr.*
A. russuloides *Pk.*
A. solitaria *Bull.*

Amanitopsis vaginata (*Bull.*) *Roze*
A. volvata (*Pk.*) *Sacc.*
Amelanchier oligocarpa (*Mx.*)
Aralia nudicaulis *L.*
Arctium lappa *L.*
Artemisia caudata *Mx.*
Asplenium eben. hortonae *Dav.*
A. eben. incisum *Howe*
Betula lenta *L.*
B. papyrifera *Marsh.*
B. populifolia *Marsh.*
Bidens bipinnata *L.*
Boletus aureipes *Pk.*
B. bicolor *Pk.*
B. castaneus *Bull.*
B. chromapes *Frost*
B. chrysenteron *Fr.*
B. felleus *Bull.*
B. frostii *Russ.*
B. rugosiceps *Pk.*
B. russellii *Frost*
B. subaureus *Pk.*
Bovista plumbea *Pers.*
Bulgaria rufa *Schw.*
B. rufa magna *Pk.*
Cassia chamaecrista *L.*
C. nictitans *L.*
Chimaphila umbellata (*L.*) *Nutt.*
Cicuta maculata *L.*
Clitocybe ochropurpurea *Berk.*
Clitopilus noveboracensis *Pk.*
C. prunulus (*Scop.*) *Fr.*
Collybia dryophila (*Bull.*) *Fr.*
Cornus amomum *Mill.*
C. candidissima *Marsh.*
C. circinata *L'Her.*
Cortinarius amarus *Pk.*
C. bolaris (*Pers.*) *Fr.*
C. corrugatus *Pk.*
C. heliotropicus *Pk.*
C. semisanguineus (*Fr.*)
C. torvus *Fr.*
Crataegus acclivis *Sarg.*
C. champlainensis *Sarg.*
C. coccinea *L.*
C. durobrivensis *Sarg.*
C. ferentaria *Sarg.*
C. gemmosa *Sarg.*
C. oxyacantha *L.*
C. succulenta *Lk.*
Drosera rotund. comosa *Fern.*
Elatine americana (*Pursh*) *Arn.*
Entomosporium maculatum *Lev.*
Epipactis viridiflora (*Hoffm.*)
Equisetum hyemale *L.*
E. variegatum *Schleich.*
Fomes conchatus (*Pers.*) *Fr.*
F. rimosus *Berk.*
Gentiana quinquefolia *L.*
Gyromitra esculenta (*Pers.*) *Fr.*
Gyrostachys gracilis (*Bigel.*)
Hibiscus moscheutos *L.*
Hicoria glabra (*Mill.*) *Britton*
Hordeum hexastichon *L.*
Hydnum albonigrum *Pk.*
H. aurantiacum *A. & S.*
H. caput-ursi *Fr.*
H. mucidum *Pers.*
H. rufescens *Pers.*
H. schiedermayeri *Heuf.*
H. scrobiculatum *Fr.*
H. septentrionalis *Fr.*
H. spongiosipes *Pk.*
H. vellereum *Pk.*
Hygrophorus peckii *Atk.*
Hypholoma perplexum *Pk.*
Hypocrea citrina (*Pers.*) *Fr.*
Hypomyces lactifluorum (*Schw.*)
Ilex vert. cyclophylla *Robins.*
Inocybe flocculosa *Berk.*
Iris pseudacorus *L.*
Irpex nodulosus *Pk.*
Juglans cinerea *L.*
Juncus brachycephalus (*Engelm.*)
Lactarius brevis *Pk.*
L. camphoratus (*Bull.*)
L. fuliginosus *Fr.*
L. indigo *Schw.*
L. parvulus *Pk.*
L. scrobiculatus (*Scop.*)
L. serifluus (*DC.*) *Fr.*
L. sordidus *Pk.*
L. subdulcis (*Bull.*) *Fr.*
L. trivialis *Fr.*
L. vellereus *Fr.*
Lathyrus maritimus (*L.*) *Bigel.*
L. ochroleucus *Hook.*
Lentinus cochleatus *Fr.*
Lenzites sepiaria *Fr.*
Lychnis chalcedonica *L.*
Lysimachia quadrifolia *L.*
L. vulgaris *L.*

Marasmius oreades *Fr.*
M. salignus *Pk.*
M. scorodonius *Fr.*
M. siccus *Schw.*
M. subnudus (*Ellis*) *Pk.*
Monarda mollis *L.*
Monilia fructigena *Pers.*
Onosmodium carolinianum (*Lam.*)
Otidea onotica ochracea *Fr.*
Panus torulosus *Fr.*
Peramium repens (*L.*) *Salisb.*
Peltigera aphthosa (*L.*) *Hoffm.*
Phallus duplicatus *Bosc*
Pholiota comosa *Fr.*
P. squarrosoides *Pk.*
P. vermiflua *Pk.*
Phytolacca decandra *L.*
Phylloporus rhodoxanthus (*Schw.*)
Picea brevifolia *Pk.*
P. rubens *Sarg.*
Pleurotus cornucopioides *Pers.*
P. ostreatus (*Jacq.*) *Fr.*
Polyporus berkeleyi *Fr.*
P. frondosus *Fr.*
P. schweinitzii *Fr.*
P. sulphureus (*Bull.*) *Fr.*
Polystictus circinatus *Fr.*
P. simillimus *Pk.*
Prunus americana *Marsh.*
P. virginiana *L.*
Pterospora andromedea Nutt.
Pyrola secunda *L.*
Rhus glabra *L.*
Ribes prostratum *L'Her.*
Roestelia aurantiaca *Pk.*
Rhynchospora glomerata (*L.*) *Vahl*
Rubus neglectus *Pk.*
Russula albida *Pk.*
R. decolorans *Fr.*
R. emetica *Fr.*
R. flavida *Frost*
R. mariae *Pk.*
R. sordida *Pk.*
R. sororia *Fr.*
R. uncialis *Pk.*
R. variata *Banning*
R. virescens (*Schaeff.*)
Salix lucida *Muhl.*
S. serissima (*Bail.*) *Fern.*
Solenia villosa *Fr.*
Stereum sericeum *Schw.*
Strobilomyces strobilaceus (*Scop.*)
Stropharia semiglobata (*Batsch*)
Thelephora intybacea *Pers.*
T. laciniata *Pers.*
Tilia vulgaris *Hayne*
Trametes pini (*Brot.*) *Fr.*
T. trogii *Berk.*
Tricholoma portentosum *Fr.*
T. radicatum *Pk.*
T. subacutum *Pk.*
Triosteum aurantiacum *Bickn.*
Trillium grandiflorum (*Mx.*)
Verticillium enecans *Speg.*
Vicia caroliniana *Walt.*
Viola arenaria *DC.*
V. conspersa *Reichen.*
V. cucullata *Ait.*
V. fimbriatula *J. E. Smith*
V. palmata *L.*
V. rotundifolia *Mx.*
V. selkirkii *Pursh*

CONTRIBUTORS AND THEIR CONTRIBUTIONS

Miss H. C. Anderson, Lambertville N. J.

Coprinus comatus *Fr.*
Tricholoma personatum *Fr.*
Volvaria bombycina *Pers.*

Mrs E. B. Blackford, Boston Mass.

Hydnum blackfordae *Pk.*

Miss G. S. Burlingham, Binghamton

Epipactis viridiflora (*Hoffm.*) *Reichb.*

Mrs M. S. DeCoster, Little Falls

Asplenium ebeneum hortonae *Dav.*

Mrs P. H. Dudley, New York

Melanthium latifolium *Desr.*

Miss Alice Eastwood, San Francisco Cal.

Hirneola polytricha *Mont.* | Montagnites candollei *Fr.*

Mrs L. L. Goodrich, Syracuse

Hydnum caput-ursi *Fr.* | Trillium grandiflorum (*Mx.*) *Salisb.*

Mrs T. J. Leach, Syracuse

Iris pseudacorus *L.*

Miss J. A. Moses, Jamestown

Hordeum hexastichon *L.*

Mrs F. W. Patterson, Washington D. C.

Lentinus spretus *Pk.*

Mrs F. C. Sherman, Syracuse

Tricholoma paeonium *Fr.* | Boletus chrysenteron *Fr.*

Miss T. L. Smith, Worcester Mass.

Corticium lilacino-fuscum *B. & C.* | Hydnum cinnabarinum *Schw.*

Phlebia radiata *Fr.*

Miss M. L. Sutliff, Sacramento Cal.

Galera reticulata *Pk.* | Marasmius sutliffae *Pk.*

Hypholoma incertum *Pk.* | Rhizopogon luteolus *Fr.*

Miss A. E. Tilton, Seal Harbor Me.

Hydnum suaveolens *Scop.*

Miss Adeline VanHorne, Montreal Can.

Armillaria imperialis *Fr.*

Mrs Elizabeth Watrous, New York

Pterospora andromedea *Nutt.*

Mrs M. S. Whetstone, Minneapolis Minn.

Clitocybe candicans *Pers.* | Lentinus obconicus *Pk.*

F. H. Ames, Brooklyn

Clitocybe trullisata *Ellis*

J. C. Arthur, Lafayette Ind.

Coleosporium campanulae (*Pers.*) *Lev.* | Puccinia andropogonis *Schw.*

C. vernoniae *B. & C.* | P. schedonnardi *K. & G.*

Peridermium holwayi *Syd.* | Uredo panici *Arth.*

P. ornamentale *Arth.* | Uromyces hedysari paniculata *Schw.*

H. J. Banker, Greencastle Ind.

Hydnum versipelle *Fr.* | Polyporus underwoodii *Murr.*

Thelephora intybacea *Pers.* | P. berkeleyi *Fr.*

Craterellus clavatus (*Pers.*) *Fr.* | P. poripes *Fr.*

F. S. Boughton, Pittsford

Cortinarius rubripes *Pk.*
Hypomyces lateritius (*Fr.*) *Tul.*
Pholiota comosa *Fr.*

F. J. Braendle, Washington D. C.

Boletus albellus *Pk.*

S. H. Burnham, Sandy Hill

Aecidium trientalis *Trans.*
Asplenium eben. incisum *Howe*
Hydnum mucidum *Pers.*
H. septentrionale *Fr.*
Merulius ulmi *Pk.*
Peltigera aphthosa (*L.*) *Hoffm.*
Polyporus cuticularis (*Bull.*) *Fr.*
Poria fuscocarnea *Pers.*
Puccinia helianthi *Schw.*
Secotium acuminatum *Mont.*
Stropharia melasperma (*Bull.*)
Tricholoma unifactum *Pk.*
Verticillium enecans *Speg.*

H. P. Burt, New Bedford Mass.

Cortinarius heliotropicus *Pk.*
Geoglossum farlowi *Cke.*

A. K. Cole, Albany

Lycoperdon giganteum *Batsch*

Simon Davis, Boston Mass.

Cortinarius violaceus (*L.*) *Fr.*
Hygrophorus laurae *Morg.*
H. marginatus *Pk.*
H. purus *Pk.*
Mycena epipterygia (*Scop.*) *Fr.*
Pholiota praecox minor (*Batt.*)
Psilocybe foenisecii (*Pers.*) *Fr.*
Stropharia albocyanea *Desm.*

Frank Dobbin, Shushan

Boletus chrysenteron *Fr.*

P. H. Dudley, New York

Pinus palustris *Mill.* (wood specimen)

W. W. Eggleston, New York

Amelanchier arguta *Nutt.*
Crataegus blanchardi *Sarg.*
C. dissona *Sarg.*
C. foetida *Ashe*
C. frizzelii *Sarg.*
Crataegus contigua *Sarg.*
C. paddockae *Sarg.*
C. praecoqua *Sarg.*
C. rhombifolia *Sarg.*
C. robbinsiana *Sarg.*

C. E. Fairman, Lyndonville

Coccospora aurantiaca *Wallr.*
Erinella raphidospora (*Ellis*)
Geopyxis nebulosa (*Che.*) *Sacc.*
Lachnella flammea (*A. & S.*)
Oligonema nitens (*Lib.*) *Rost.*
Perichaena quadrata *Macb.*
Zygodesmus pallidofulvus *Pk.*

W. G. Farlow, Cambridge Mass.

Stropharia formosa *Farl.* ined.

E. P. Felt, Nassau

Polystictus perennis (*L.*) *Fr.*
Tricholoma portentosum *Fr.*

O. E. Fischer, Detroit Mich.

Amanita cothurnata *Atk.*
Annularia sphaerospora *Pk.*
Bulgaria rufa *Schw.*
Peziza odorata *Pk.*

B. D. Gilbert, Clayville

Webera acuminata *Schp.*

N. M. Glatfelter, St Louis Mo.

Inocybe desquamans *Pk.*
Lentinus microspermus *Pk.*
Lepiota nudipes *Pk.*
Russula nigrescentipes *Pk.*

W. R. Griffiths, Douglaston

Calochortus umbellatus *Wood*

Cephas Guillet, Toronto Can.

Galera later. albicolor *Pk.*
Psilocybe foenisecii (*Pers.*)

J. V. Haberer, Utica

Achroanthes unifolia (*Mx.*) *Raf.*
Alsine gram. lanceolata *Fenzl.*
Antennaria arnoglossa *Greene*
Betula populifolia *Marsh.*
Botrychium obliq. habereri *Gilb.*
Callitriche heterophylla *Pursh*
Carex albicans *Willd.*
C. castanea *Wahl.*
C. muhlenbergii *Schk.*
C. schweinitzii *Dew.*
Ceanothus americanus *L.*
Corallorhiza multiflora *Nutt.*
C. mult. flavida *Pk.*
Drosera intermedia *Hayne*
D. rot. comosa *Fern.*
Elatine americana (*Pursh*) *Arn.*
Equisetum hyem. affine *Eaton*
E. hyem. intermedium *Eaton*
E. littorale *Kuehl.*
E. varieg. nelsoni *Eaton*
Galium aparine *L.*
Hieracium venosum *L.*
Hypericum canadense *L.*
Ilex vert. cyclophylla *Robins.*
Juncus tenuis anthelatus *Wieg.*
Lathyrus maritimus *L.*
Lemna minor *L.*
L. trisulca *L.*
Limnorchis huronensis *Rydb.*
Lycopodium inundatum *L.*
Monarda mollis L.
Ranunculus repens *L.*
Rhynchospora fusca (*L.*) *R. & S.*
R. glomerata (*L.*) *Vahl*
Scirpus subterminalis *Torr.*
Sparganium angustifolium *Mx.*
Triosteum aurantiacum *Bickn.*
Vaccinium penn. angustifolium (*Ait.*)
Veronica chamaedrys *L.*
Xanthoxylon americanum *Mill.*
Xyris caroliniana *Walt.*
X. montana *Ries*

C. C. Hanmer, East Hartford Ct.

Agaricus arv. purpurascens *Cke.*
Craterellus pogonati *Pk.*
Irpex mollis *B. & C.*
Merulius tremellosus *Schrad.*

J. W. Harshberger, Philadelphia Pa.

Specimens of 190 species of Pocono plateau plants

M. E. Hard, Chillicothe O.

Armillaria nardosmia *Ellis*
Cordyceps herculea *Schw.*
Cyclomyces greenei *Berk.*
Hydnum adustum *Schw.*
H. spongiosipes *Pk.*
Trametes rubescens *A. & S.*

A. A. Heller, Los Gatos Cal.

Erysiphe polygoni *DC.*
Marsonia pot. helleri *Pk.*
Melasmia arbuticola *Vize*
Monilia avenae *Pk.*
Puccinia baccharidis *D. & H.*
P. menth. americana *Burr.*
Sphaerotheca humuli (*DC.*) *Burr.*
Uromyces trifolii (*Hedw.*) *Lev.*

C. P. Hoag, Albany

Lycoperdon giganteum *Batsch*

E. W. D. Holway, Minneapolis Minn.

Puccinia gigantispora *Bubak*
P. ostenta *Holway*
P. porteri *Coulter*
Puccinia salviicola *D. & H.*
P. scandica *Johans.*
Ravenelia spinulosa *D. & H.*

Edgar A. Houghtaling, Albany

An obconic nut, probably of some species of palm.

C. H. Kaufman, Ann Arbor Mich.

Cortinarius anfractus *Fr.*
C. annulatus *Pk.*
C. armillatus *Fr.*
C. bolaris *Fr.*
C. castanellus *Pk.*
C. collinitus *Fr.*
C. croceocolor *Kauff.*
C. cylindripes *Kauff.*
Cortinarius obliquus *Pk.*
C. pholideus *Fr.*
C. semisanguineus (*Fr.*)
C. sterilis *Kauff.*
C. subbivelus *Kauff.*
C. torvus *Fr.*
C. umidicola *Kauff.*

E. A. Lehman, Winston-Salem N. C.

Hexalectis aphyllus (*Nutt.*) *Raf.*

R. B. Mackintosh, Peabody Mass.

Agaricus micromegethus *Pk.*
Secotium acuminatum *Mont.*

E. R. Memminger, Flat Rock N. C.

Craterellus odoratus *Schw.*

G. E. Morris, Waltham Mass.

Boletinus cavipes *Opat.*
B. paluster *Pk.*
Boletus illudens *Pk.*
B. nobilis *Pk.*
Eccilia atrides *Lasch.*
Flammula squalida *Pk.*
Hygrophorus marginatus *Pk.*
H. speciosus *Pk.*

R. S. Phifer, Danville Va.

Boletus ravenelii *B. & C.*

William Richards, Albany

Lycoperdon giganteum *Batsch*

I. M. Shepherd, Trenton N. J.

Agaricus campester exannulatus *Cke.*

Perley Spaulding, St Louis Mo.

Daedalea ambigua *Berk.*
Fomes ribis (*Schum.*) *Fr.*
Polyporus obtusus *Berk.*
P. scruposus *Fr.*

E. B. Sterling, Trenton N. J.

Cantharellus aurantiacus *Fr.*
Cordyceps sinensis (*Berk.*) *Sacc.*
Panaeolus papilionaceus *Fr.*
Pleurotus bretschneideri *Kalchb.*

R. H. Stevens, Detroit Mich.

Guepinia bicolor *Pk.*

F. C. Stewart, Geneva

Gloeosporium riessii *S. & S.*
Sporotrichum anthophilum *Pk.*

D. R. Sumstine, Kittanning Pa.

Cordyceps capitata (*Holmsk.*) *Lk.*

W. B. Varnum, Albany

Stropharia melasperma (*Bull.*) *Fr.*

E. A. White, Storrs Ct.

Amanitopsis volvata (*Pk.*) *Sacc.*
Collybia tuberosa (*Bull.*) *Fr.*

T. E. Wilcox, Washington D. C.

Cortinarius anomalus *Fr.*

B. C. Williams, Newark

Polyporus frondosus Fr.

Osaka Mushroom Merchants Association, St Louis Mo.

—— Pleurotus bretschneideri *Kalchb.*

SPECIES NOT BEFORE REPORTED

Actaea eburnea Rydb.

Meadowdale and Karner, Albany co. May, in flower. July, in fruit. Formerly considered a form of Actaea alba with slender pedicels.

Aecidium trientalis Tranz.

On living leaves of star flower, Trientalis americana. East Lake George marsh. June. S. H. Burnham.

Anthostoma gastrina (Fr.) Sacc.

Dead bark of hickory. Crown Point, Essex co.

Boletus acidus n. sp.

PLATE T, FIG. 1–6

Pileus fleshy, rather thin, firm, convex, very glutinous when moist, yellowish white, the margin of young plants often appendiculate with fragments of the whitish floccose and glutinous veil, flesh

whitish, taste acid and disagreeable; tubes short, adnate, concave in the mass in young plants, becoming plane with age, the mouths minute, subrotund, pale yellow, becoming darker with age; stem firm, equal or slightly tapering upward, subflexuous, solid, minutely dotted with brown or brownish glands, both above and below the slight, mostly glutinous and evanescent annulus; spores subferruginous, oblong elliptic, .0003–.0004 of an inch long, .00012–.00016 broad.

Pileus 1-2 inches broad; stem 1.5–3 inches long, 2–3 lines thick. Under pine and hemlock trees. Port Henry. August.

This species belongs to the section Viscipelles. It is closely related to Boletus punctipes and B. americanus from which it is separated by its slight but mostly evanescent annulus and by its acid taste.

Clavaria conjuncta Pk.

Among fallen leaves in woods. Bolton Landing, Warren co. July. For a description of the species, turn to the chapter on edible fungi.

Clitopilus squamulosus n. sp.

PLATE 8, FIG. 5–8

Pileus thin, nearly plane, deeply umbilicate, floccose squamulose, specially in the center, grayish brown and shining, flesh whitish; lamellae close, adnate or slightly decurrent, tinged with flesh color; stem long, slightly tapering upward, hollow, fibrous striate and colored like or a little paler than the pileus in the upper part, even and white toward the base; spores flesh color, subquadrate, angular, .0005 of an inch broad, with a large shining nucleus.

Pileus 1-1.5 inches broad; stem 3-4 inches long, 2-3 lines thick. Among fallen leaves in woods. Bolton Landing. July.

A species easily recognized by its squamulose deeply umbilicate pileus. The squamules in the center of the pileus are erect.

Coccospora aurantiaca Wallr.

Decayed wood. Lyndonville, Orleans co. C. E. Fairman.

Cortinarius rubripes n. sp.

Pileus thin, broadly convex becoming plane or nearly so, sometimes slightly depressed in the center, rarely slightly umbonate, minutely silky fibrillose, grayish ferruginous or pale alutaceous, flesh whitish; lamellae subdistant, emarginate, violaceous becoming cinnamon; stem enlarged or subbulbous at the base, hollow, bright red; spores elliptic, .0003–.0004 of an inch long, about .0002 broad.

Pileus 1-1.5 inches broad; stem 1-1.5 inches long, 2-4 lines thick. Woods. Pittsford, Monroe co. September. F. S. Boughton.

The color of the stem of this species indicates a relationship with such species as Cortinarius sanguineus and C. cinnabarinus. The discoverer of the species describes the colors of the cap and gills as very similar to those of Clitocybe ochropurpurea. The red stem and violet or purplish violet gills of the young plant make it a beautiful and very attractive species.

Crataegus acuminata Sarg.[1]

The acuminate thorn is closely related to C. streeterae and C. glaucophylla, but it may be separated from the first by the absence of wrinkles from the leaves, and from the second by the absence of glaucous hues from them.

Crataegus ambrosia Sarg.

The ambrosial thorn is so closely allied to the Hall thorn that they are not readily distinguished from each other when in flower, but with the full development of the leaves and fruit they are easily separated, the leaves being broader and the fruit of the ambrosial thorn being much larger and fewer in a cluster. It also persists later in the season. The bushes are red with fruit to the end of November.

Crataegus asperifolia Sarg.

The roughish-leaved thorn is similar in its general characters to the rubicund thorn, C. rubicunda, from which it may be separated by its glabrous calyx tube, which is also less reddish, more glandular calyx lobes and shorter pointed leaves. The petioles in our specimens are also generally shorter. The fruit of typical C. asperifolia is described as having yellow flesh, but in our specimens it becomes tinged with red late in the season.

Crataegus beckiana Sarg.

The Beck thorn in some of its characters is suggestive of C. rhombifolia, but it is a much larger treelike shrub with thicker leaves, glabrous calyx tube and with large drooping clusters of fruit.

Crataegus caesariata Sarg.

The hairy thorn belongs to the group Coccineae and when in flower it might be taken to be a form of C. coccinea. Its

[1]The descriptions of this and other new species of this genus will be found in the chapter on species of Crataegus found within 20 miles of Albany.

fruit, however, is quite different from the fruit of that species and is much later in ripening. Spines are almost entirely absent from the branches. In the North Albany clump only two small ones were found; in the Wynantskill clump none was found on the living branches and only three on one dead twig. In a third clump no spines are present.

Crataegus casta Sarg.

The chaste thorn belongs to the large group Pruinosae and to a possible section in which the flowers have 20 stamens with pink anthers. The fruit is beautifully colored and its pointed base affords an available character by which to distinguish the species from its near allies.

Crataegus conspicua Sarg.

The conspicuous thorn is a large shrub quite distinct from our other species of this group by its very hairy inflorescence and by the hairy lower surface of the leaves. The fruit persists till late in the season and sometimes a considerable part of it hangs on the branches through the winter.

Crataegus contortifolia Sarg.

The twisted-leaved thorn takes its name from one of the easily recognized and distinguishing characters of the species. This consists in a peculiar folding or wavelike curving of the margin of the leaf, as if there was a superabundant formation of marginal tissue for which there was no room in the ordinary plane of the leaf. This results in the curving of the margin. Such leaves do not press flat and smooth in the plant press. The species has affinities with C. champlainensis, C. submollis, C. tatnalliana and C. arnoldiana, but with none of them does it satisfactorily agree. It was erroneously referred to C. tatnalliana in New York State Museum Bulletin 94, page 28.

Crataegus demissa Sarg.

The low thorn grows from 4 to 6 feet tall and has small leaves, small flowers and small fruit. It is quite diminutive in all its parts and easily recognized.

Crataegus divergens Sarg.

The divergent thorn was formerly considered a variety of the unshaven thorn, C. irrasa, but it is now deemed worthy of specific distinction. It grows in patches rather than in clumps.

Crataegus eatoniana Sarg.

The Eaton thorn is yet limited to a single locality and a single small thicket in that locality. It is a peculiar species which by its leaves simulates species of the group Tomentosae, but its nutlets with plane inner faces forbid its reference to that group. It makes a second species for us in the group Punctatae.

Crataegus edsoni Sarg.

The Edson thorn has been found in a single locality in our territory. There are two clumps of it growing near each other a short distance north of Lansingburg. The species normally has 20 stamens in its flowers, but in our form of it the number ranges from 10 to 19. The prevailing number is 10 to 16. The fruit ripens about the first of September and soon falls.

Crataegus flagrans Sarg.

The flagrant thorn is a large shrub which is peculiar to a single locality. Its prominent characters are its thin leaves, hairy inflorescence with many flowered clusters and 10 stamens with white anthers.

Crataegus genialis Sarg.

The genial thorn is one of the common species in the vicinity of Albany. It is somewhat variable and not always readily recognizable. Its ascending branches and the ovate leaves being scarcely lobed except on vigorous shoots and the fruit commonly longer than broad are some of the most notable characters.

Crataegus halliana Sarg.

The Hall thorn has flowers with 20 stamens and white or pale yellow anthers. Its fruit is rather small but forms large many fruited drooping clusters which are conspicuous when ripe.

Crataegus helderbergensis Sarg.

The Helderberg thorn is a small tree with nearly horizontal wide-spreading branches suggestive of the appearance of the dotted fruited thorn, C. punctata. Its broad leaves and hairy inflorescence are distinguishing characters of the species. It has been found at Thompson Lake only, and belongs to the group Crus-galli.

Crataegus howeana Sarg.

The Howe thorn has the characteristic fruit of many species of the group Pruinosae. It is globose or depressed globose and more or less angular. It is rounded at the base and in this respect differs

from the fruit of C. casta. Its flowers have 20 stamens with pale pink anthers, and its branches are furnished with numerous short branchlets and rather small slender spines.

Crataegus hystricina Ashe

The hedgehog thorn is probably so named because of its numerous spines. It has been found in our territory at Thompson Lake only.

Crataegus illuminata Sarg.

The illuminated thorn, in habit and general appearance of its foliage, is similar to C. dodgei. Its fruit is usually a little longer than broad and ripens earlier than the fruit of C. dodgei.

Crataegus mellita Sarg.

The honey thorn is very closely related to the Brainerd thorn, C. brainerdi, to which I formerly referred it, but from which it may be separated by its thinner leaves. Its fragrant honey-producing flowers are suggestive of the specific name. It is yet limited to a single locality. It inhabits rocky soil. It is remarkable in retaining the freshness of its reddish filaments almost to the time of ripening of its fruit.

Crataegus menandiana Sarg.

The Menand thorn is a large shrub belonging to the group Tomentosae. Its flowers have 20 stamens, but it differs from all our other species with 20 stamens in having red anthers. They are more highly colored than in our specimens of C. gemmosa and C. succulenta.

Crataegus oblongifolia Sarg.

The oblong leaved thorn belongs to the group Molles and is related to C. exclusa. Its flowers have the anthers more highly colored than in the Albany form of C. exclusa, and some of the leaves are much longer than broad, a character suggestive of the specific name. It is at present limited to the Menands locality so far as is known.

Crataegus peckietta Sarg.

The second Peck thorn is a northern species. It has been found at Piseco and Lake Pleasant in Hamilton county, at Keene and Port Henry in Essex county and at Horicon in Warren county. It sometimes retains a part of its fruit through the winter. The fruit is so peculiar in shape that often it is recognizable even after the shriveling and discoloration it undergoes during the winter.

It is broadly rounded or almost truncate at the base and slightly narrowed toward the apex. The plants bear fruit abundantly when only 4 or 6 feet tall, but they sometimes become 12 to 16 feet tall. They grow on rather light but rocky soil.

Crataegus pentandra Sarg.

The five stamened thorn, in its typical form, is said to have five stamens and to be a tree. Our forms are mostly shrubs and the stamens vary from 5 to 10 in flowers on the same shrub.

Crataegus polita Sarg.

The polished thorn has been found in only one locality in our territory. It there grows in poor rocky soil.

Crataegus rhombifolia Sarg.

The rhombic leaved thorn belongs to the thin leaved section of the group Tomentosae. It is, with us, a shrub of moderate size and has flowers with 10 stamens and pink anthers. The pedicels are hairy and the calyx tube is also more or less hairy. The species is rather common in the vicinity of Albany.

Crataegus robbinsiana Sarg.

The Robbins thorn sometimes forms a small tree but in the vicinity of Albany it is more often a shrub. The appearance of the leaves suggests a relationship to such species of the group Intricatae as C. intricata and C. foetida, but the fruit is pruinose and the species is referable to the group Pruinosae.

Crataegus rubrocarnea Sarg.

The red fleshed thorn takes its name from the deep red color of the flesh of the fully ripened fruit. It is closely related to C. rubicunda but may be distinguished from it by its more globose fruit in fewer fruited clusters and more persistent calyx lobes. It is at present limited to a single locality.

Crataegus sejuncta Sarg.

The separated thorn is allied to the polished thorn, C. polita, from which it is separated by its short, stout, hairy pedicels, more numerous stamens and rather larger crimson fruit. It is a large shrub.

Entoloma flavifolium n. sp.

PLATE 8, FIG. 9–15

Pileus thin but firm, broadly convex or nearly plane, glabrous, hygrophanous, watery white and sometimes slightly striatulate on

the thin margin when moist, white when the moisture has disappeared, flesh-colored like the surface of the pileus, taste mild or slightly and tardily acrid; lamellae thin, close, rounded behind, adnexed, slightly eroded or uneven on the edge, pale yellow becoming pinkish; stem firm, equal, silky fibrillose, white mealy at the top, stuffed or hollow, whitish; spores bright pink, subglobose, slightly angular, .0003-.0004 of an inch broad, apiculate at one end.

Pileus 1-2 inches broad; stem 1.5-2 inches long, 2-4 lines thick. In dense woods among fallen leaves. Port Henry, Essex co. August. The species is well marked in the young plant by the clear pale yellow gills. Sometimes the margin of the pileus is wavy or irregular and the center tinged with brown when moist.

Erinella raphidospora (Ellis) Sacc.

Decaying wood. Lyndonville. C. E. Fairman.

Exoascus cecidomophilus Atk.

On fruit of chokecherry, Prunus virginiana. Bergen, Genesee co. July.

The diseased fruit is less elongated than when attacked by Exoascus confusus and is not curved. Moreover the calyx is not so conspicuously enlarged nor so persistent as when E. confusus is the parasite.

Geopyxis nebulosa (Cke.) Sacc.

Decaying wood. Lyndonville. July. C. E. Fairman.

Geranium sibiricum L.

The Siberian cranesbill is an introduced species but it was found growing plentifully and spontaneously at Wading River, Suffolk co. in August.

Gloeosporium riessii Schl. & Sacc.

On appletree bark. Geneva. October. Collected by D. B. Slight; communicated by F. C. Stewart.

Hydnum cyaneotinctum Pk.

The blue tinted hydnum has the peculiar structure of the pileus attributed by Professor Fries to the pileus of Polystictus circinatus. The upper stratum is of a soft spongy texture, the lower is hard and continuous with the stem. Both are usually slightly zonate. The stem is covered with a dense spongy tomentum. It is sometimes eccentric or even lateral, specially when the plant grows against a stump, stone or other obstruction which prevents

the free development of the pileus. When young, the pileus is whitish or white tinged with yellow. It soon assumes a buff color, with the margin commonly tinged with blue and becoming a darker blue where bruised. In old specimens the center or sometimes the whole becomes ferruginous brown. The aculei are at first white but they become brown or ferruginous brown with age. The spores are purplish brown, subglobose or oval, .00016 of an inch in diameter.

The plant has a farinaceous odor when cut or bruised. It is sometimes cespitose. It grows under hemlock trees. Horicon, Warren co. July.

Hypomyces camphorati n. sp.

Subiculum thin, effused, overrunning and obliterating the hymenium of the host plant, yellow; perithecia numerous, minute, immersed in the subiculum, the ostiolum exposed, brown; asci very long, .005-.006 of an inch (sporiferous part), eight spored; spores monostichous, oblong fusiform, continuous, acute or slightly cuspidate at each end, .0005-.0006 of an inch long, .00016-.0002 broad.

On the hymenium of Lactarius camphoratus. Port Jefferson, Suffolk co. August.

Closely allied to H. volemi Pk. from which it is distinguished by its yellow subiculum, its longer asci and acute or cuspidate spores.

Hypomyces lateritius (Fr.) Tul.

On the hymenium of Lactarius indigo. Pittsford, Monroe co. F. S. Boughton.

Inocybe diminuta n. sp.

Pileus thin, hemispheric becoming convex or nearly plane, squamose with hairy, erect or squarrose scales in the center, fibrillose on the margin, grayish brown; lamellae subdistant, broadly sinuate, adnexed, ventricose, at first whitish, then brownish or rusty brown; stem short, firm, solid, silky fibrillose, whitish in the upper part, grayish brown and subsquamulose toward the base; spores subglobose, nodulose, .0003-.0004 of an inch long, .0003 broad.

Pileus 3-6 lines broad; stem 4-8 lines long, about 1 line thick. Bare compact soil in wood roads. Wading River. August.

A small but distinct species belonging to the section Lacerae.

Inocybe radiata Pk.

Port Jefferson. August. Smaller than the type form but otherwise like it.

Juncus brachycephalus (Engelm.) Buch.

Formerly considered a variety of Juncus canadensis, but now raised to specific rank. Jamesville, Onondaga co. Sevey, St Lawrence co. C. H. Peck. West Danby, Tompkins co. W. R. Dudley. Waverly, Tioga co. F. E. Fenno.

Lachnella flammea (A. & S.) Fr.

On decorticated maple wood. Lyndonville. C. E. Fairman.

Lactarius rimosellus Pk.

Wading River, Suffolk co. August. Edible. The description of this species will be found in the chapter on edible fungi.

Lentinus spretus n. sp.

Pileus thin, tough, convex becoming nearly plane, obtuse or umbonate, rimose squamulose, grayish brown or pale alutaceous, often more highly colored in the center than on the margin, flesh white; lamellae rather narrow, close, decurrent, whitish, lacerate serrate on the edge; stem usually rather long, equal or sometimes narrowed or sometimes thickened toward the base, substriate, solid, more or less squamose, often eccentric, whitish, sometimes brownish toward the base; spores white, oblong, .0003-.0004 of an inch long, .00016 broad.

Pileus 2-5 inches broad; stem 1-3 inches long, 3-6 lines thick. Decaying wood of pine. Horicon, Warren co. July. Railroad ties. Albia, Rensselaer co. September.

This species has probably been confused with Lentinus lepideus, from which it may be separated by its more slender habit, thinner pileus, smaller scales, more narrow decurrent lamellae without a sinus, and specially by its smaller spores. In our specimens there is no evidence of a veil.

Leptosphaeria substerilis n. sp.

Foliicolous; spots small, .5-1 line broad, numerous, suborbicular, often confluent, generally sterile, brown or blackish brown, surrounded by an elevated line; perithecia few, 1-6 on a spot, unequal, covered by the epidermis, black; asci subcylindric or clavate, slightly narrowed toward the base; spores crowded in the ascus, colored, triseptate, subfusiform, .001-.0012 of an inch long, .0003 broad.

Living leaves of peppermint, Mentha piperita. Lakeport, Madison co. July.

The diseased tissue shrinks below the level of the surrounding healthy tissue and eventually separates from it and falls away, leaving circular holes in the leaves.

Marasmius longistriatus n. sp.

PLATE 8, FIG. 1–4

Pileus membranaceous, convex becoming plane with a central depression or sometimes broadly infundibuliform, moist when young and striate almost to the center, bay-brown when moist, reddish gray when dry; lamellae thin, narrow, close, adnate, unequal, whitish; stem equal, externally cartilaginous, stuffed or hollow, covered with a grayish downy pubescence which is sometimes longer at the base.

Pileus 3-6 lines broad; stem 8-12 lines long, .5 of a line thick. Under pine and hemlock trees. Bolton Landing. July.

This resembles M. subnudus in color but it is a much smaller plant with long fine striae on the pileus and with much closer lamellae. The central depression resembles that of Coprinus plicatilis.

Melanogaster durissimus Cke.

Menands, Albany co. September 1904. A single specimen, somewhat smaller than the type form and without the strong odor attributed to that form, was found. Its hardness is remarkable and proves the appropriate character of the specific name. The type form was found in India, but specimens of the species have been reported from California by Dr H. W. Harkness. It is manifestly a species rarely found, but one having a wide range.

Merulius pruni n. sp.

Effused, thin, separable from the matrix, soft, with a definite whitish or pallid scarcely byssin margin; folds forming angular or irregular pores with dentate or sometimes irpiciform dissepiments, ecru drab when fresh, darker or subcervine when dry.

Bark of wild red cherry, Prunus pennsylvanica. Horicon. July.

It forms patches several inches long and broad, but these appear as if formed by the confluence of many small orbicular patches, the hymenium being faintly marked by concentric ridges or elevated lines. The texture is soft and somewhat waxy yet slightly tenacious and the margin is nearly glabrous. The specimens are sterile.

Merulius ulmi n. sp.

Effused, thin, firm, suborbicular or by confluence, forming patches, the margin often free and narrowly reflexed, pubescent, sometimes concentrically sulcate, white; hymenium white or whitish when young, soon pale cervine, the folds forming orbicular or oblong shallow pores often beautifully and concentrically arranged; spores not seen.

Dead branches of elm, Ulmus americana. Vaughns, Washington co. November. S. H. Burnham.

Monarda mollis L.

Canadice, Ontario co. C. H. Peck. Frankfort, Herkimer co. July. J. V. Haberer. Formerly referred to M. fistulosa as a variety, but now regarded as a distinct species.

Oligonema nitens (Lib.) Rost.

Decaying wood. Lyndonville. C. E. Fairman. A beautiful species easily recognized by the swollen rings on the threads of the capillitium and by the bright shining yellow color of the heaps of peridia.

Panus fulvidus Bres.

Fence rails. Keene, Essex co. June. This is a beautiful species with the central stem squamulose and the bright tawny pileus adorned with erect or squarrose blackish scales and strongly sulcate striate margin. The edge of the lamellae in our specimens is slightly eroded or denticulate, thereby suggesting an approach to the genus Lentinus.

Perichaena quadrata Macb.

Decaying bark and dead leaves. Lyndonville. C. E. Fairman. This species may be distinguished from P. depressa by its smaller peridia.

Phyllosticta pallidior n. sp.

Spots elliptic or orbicular, 2-4 lines long, 1.5-3 lines broad, whitish or grayish white surrounded by a red or reddish margin; perithecia minute, epiphyllous, occupying the center of the spot, black; spores globose or broadly elliptic, .0004-.0006 of an inch long, .0003-.0004 broad.

Living leaves of star-flowered Solomon's seal, Vagnera stellata. Bergen swamp. July.

This species is closely allied to P. cruenta, from which it differs in the very narrow red or reddish margin of the spots and

in the shape of the spores which are nearly globose and not at all curved as in P. cruenta.

Physoderma menyanthis DeBy.

Living leaves of buck bean, Menyanthes trifoliata. Bonaparte swamp, Lewis co. June. This species has been found as far north as Alaska.

Pluteus grandis n. sp.

Pileus fleshy, firm, convex with the thin margin sometimes curved upward, silky fibrillose, white or whitish, flesh white, taste farinaceous; lamellae thin, close, free, denticulate on the edge, whitish becoming flesh-colored; stem rather long, equal, firm, solid, silky fibrillose, white; spores subglobose, angular, uninucleate, .0003 of an inch broad.

Pileus about 4 inches broad; stem 4 inches long, 10 lines thick. Among fallen leaves in woods. Bolton Landing. July.

This is a fine large species, separable from Entoloma sinuatum by its free lamellae, and from white forms of Pluteus cervinus by the angular character of the spores and by its farinaceous taste.

Polyporus underwoodii n. sp. Murr.

Pileus varying from convex to deeply concave, 12-25 cm in diameter, averaging .5 cm in thickness; surface obscurely concentrically zonate, milk-white, pruinose, cremeous on drying, the center depressed and avellaneous; margin irregularly undulate lobed, either deflexed or recurved, very thin, not ciliate; context white, fleshy, tough, homogeneous, 2-5 mm thick; tubes milk-white, 2-3 mm long, five to six to a mm, cylindric, edges thin, entire to lacerate; spores ellipsoidal, hyaline, smooth, 3 x 6-7 μ; stipe short, central, solid, woody, equal or tapering downward, smooth, pruinose, white above, fuliginous below, 3 cm long, 2-3 cm thick.

The type of this species was collected by L. M. Underwood on buried decaying roots beneath birch trees at Cornwall Ct., August 1890. Specimens were also collected in Connecticut in 1902 by C. C. Hanmer. Fine specimens were again collected by H. C. Banker on the roots of a fallen, but living willow at Schaghticoke N. Y. in August, 1904. Plants were sent by Mr Banker to the State Museum at Albany and to the New York Botanical Garden. The nearest relative of this species in our flora is probably Polyporus fissus Berk. The specimen contributed to the State Museum has the stem wholly fuliginous.

Psathyra vestita n. sp.

Pileus thin, submembranaceous, ovate, conic or subcampanulate, obtuse, at first covered with white floccose fibrils, usually with a rufescent tint, soon paler or white and silky fibrillose, sometimes slightly striate on the margin; lamellae thin, narrow, close, adnate, white when young, becoming blackish brown; stem equal, hollow, flexuous, floccose fibrillose, becoming silky fibrillose, mealy and often striate at the top, white; spores purplish brown, elliptic, .0003-.0004 of an inch long, .0002-.00024 broad.

Pileus 4-8 lines broad; stem 1-1.5 inches long, 1-1.5 lines thick. Fallen leaves and grass. North Elba. September.

This species differs from P. semivestita in its color and in being wholly clothed when young with white floccose fibrils.

Russula subsordida Pk.

Horicon. July. Edible. A description of this species may be found in the chapter on edible fungi.

Russula viridella Pk.

Under hemlock trees in woods. Horicon. July. Edible.

A description of the species may be found in the chapter on edible fungi.

Sparganium fluctuans (Morong) Robins.

Deep water of lakes and ponds. Sand lake, Rensselaer co. and Big Moose lake, Herkimer co. July and August. This was formerly considered a variety of S. androcladum but it has now been raised to specific rank.

Sporotrichum anthophilum n. sp.

Hyphae creeping, interwoven, branched, continuous or sparingly septate, variable in thickness, .00008-.00024 of an inch in diameter, hyaline, forming a loose cottony stratum; spores globose or broadly ovate, .00016-.0003 of an inch long, borne on the tips of short branchlets which are usually narrowed toward the apex and pointed.

Parasitic on the filaments and petals of carnation pinks, discoloring them, destroying their vitality and spoiling the flowers. Bayside, Queens co. Collected by William Bell; contributed by F. C. Stewart.

Stropharia melasperma (Bull.) Fr.

Grassy ground. Observatory grounds. Albany. July. W. B. Varnum and S. H. Burnham.

Symphoricarpos pauciflorus (Robbins) Britton

This was reported as a variety of S. racemosus but it is now deemed worthy of specific rank.

Thelephora intybacea Pers.

Ground. East Schaghticoke, Rensselaer co. H. J. Banker.

Tilmadoche compacta Wing.

Much decayed wood of poplar. Loudonville, Albany co. August.

Tricholoma paeonium Fr.

Grassy places. Syracuse. August. "Growing after heavy rains," a habit which Professor Fries also ascribes to the European fungus. Mrs F. C. Sherman.

Tricholoma unifactum Pk.

Under hemlock trees. Horicon. July. Edible. For a description of the species see chapter on edible fungi.

Triosteum aurantiacum Bickn.

Along West Canada creek near East Herkimer and in bogs at Cedar lake. June and July. J. V. Haberer. A species separated from T. perfoliatum because of its orange-colored fruit and leaves not connate at the base.

Uredinopsis atkinsoni Magnus

Fronds of Dryopteris thelypteris. Ithaca flats. August. G. F. Atkinson.

Uredinopsis osmundae Magnus

Fronds of the cinnamon fern, Osmunda cinnamomea. Malloryville moor, Tompkins co. August. G. F. Atkinson.

Verbascum phlomoides L.

Near the railroad station. Wading River. August. The clasping leaved mullein is an introduced species. It resembles our common mullein but it has larger flowers, shorter and broader upper leaves of a greener hue and clasping at the base, but scarcely decurrent.

Veronica chamaedrys L.

Woods and steep banks along West Canada creek at Trenton falls, Oneida and Herkimer counties. June. J. V. Haberer.

Zygodesmus pallidofulvus n. sp.

Thinly effused, pale tawny; hyphae irregularly branched, the branches often short, suberect; spores globose, echinulate, .0004-.0005 of an inch in diameter.

Decaying wood. Lyndonville. August. C. E. Fairman.

REMARKS AND OBSERVATIONS

Agaricus arvensis purpurascens Cke.

Lawns. Fishers Island, Suffolk co. C. C. Hanmer.

Alsine graminea lanceolata Fenzl.

Rocky places. Little Falls. July. J. V. Haberer.

Amanita russuloides Pk.

Among fallen leaves in woods. Bolton Landing. July. This is larger than the typical form, having the pileus 4-6 inches broad, the stem 5-8 inches long and 5-12 lines thick. The annulus has a thick floccose edge which is sometimes grooved. The volva is definitely circumscissile, adnate to the bulb and furnished above with a short obtuse free margin. A smaller specimen, entirely white, was found at Wading River in August. The species is apparently a rare one. It was founded on specimens collected in Greenbush, and published in 1873, in *New York State Museum Report* 25, page 72. Since then it had not been observed by me, though extralimital specimens have occasionally been received from correspondents.

Asplenium ebeneum hortonae Dav.

Crevices of rocks. Little Falls. September. Mrs M. S. DeCoster. This is a rare variety. It has not yet been found fertile so far as I know.

Asplenium ebeneum incisum Howe

Hartford, Washington co. October. S. H. Burnham. This variety is included by Professor Eaton in *Ferns of North America* in his description of the species, and most botanists have followed him in this conception of the species. The difference between this form of the fern and the much more common form with narrower fronds and obscurely crenulate serrate pinnae is so strongly marked, that to one accustomed to notice the very fine distinctions now made by authors in describing plants, it seems more satisfactory

to separate them. It is therefore noticed here under the varietal name published in the 22d *Annual Report of the New York State Cabinet of Natural History*, 1869, p.104.

Bulgaria rufa magna n. var.

Cups large, 3-4 inches broad, sessile, nearly plane, sometimes irregular or wavy, the broad base distended in wet weather with a watery dingy whitish gelatin; hymenium ochraceous brown; spores white, .0008-.0012 of an inch long, .0005 broad. Externally colored and venosè rugulose or subreticulated as in B. rufa. North Elba. This variety differs from the type in its habitat, which is among fallen leaves under balsam fir trees or on the ground among mosses. It does not appear to be attached to wood and is not at all narrowed into a stemlike base, but is broad and rounded underneath and the lower part is filled with a dingy watery gelatinous substance. The hymenium is ochery brown rather than rufous and the spores average a little longer than in our specimens of B. rufa. Notwithstanding these differences it has seemed to be so closely allied to B. rufa that I have thought it to be a variety of it rather than a distinct species.

Cortinarius amarus Pk.

This species was founded on specimens collected in the Adirondack region. Much larger specimens were found near Wading River the past summer. These are better developed and show clearly that the species belongs to the section Myxacium.

Cortinarius bolaris (Pers.) Fr.

With us this pretty cortinarius is beautifully spotted with red scales when fresh, but in drying, both pileus and stem assume a reddish color.

Cortinarius corrugatus Pk.

This proves to be a very variable species, yet the variations are so slight that they never disguise the true character of the species nor lead to any perplexity in its identification. Near Wading River a form occurs in which the stem when fresh appears to be almost or wholly without any bulb. In drying, the base of the stem shrinks less than the rest, so that in the dried state the stem is more distinctly bulbous.

Crataegus baxteri Sarg.

It has been found that the law of priority requires that this name must give way to Crataegus foetida Ashe, and that Crataegus dodgei Ashe must take the place of Crataegus gravesii Sarg.

Six species of Crataegus described from material found in or near Rochester have also been found in the vicinity of Albany. They are Crataegus acclivis, C. foetida (C. baxteri), C. durobrivensis, C. ferentaria, C. spissiflora and C. verecunda.

Crataegus oxyacantha L.

This introduced species is found growing wild near Albany. Some plants have white flowers, others pink. On some, the fruit is globose, on others, oval.

Drosera rotundifolia comosa Fern.

Beaver meadows and margins of lakes. Forestport, Oneida co. July. J. V. Haberer. This is a well marked and easily recognized variety. It is dwarfish in size, has its flowers in capitate clusters and the petals of a reddish or pink color.

Elatine americana (Pursh) Arn.

This rare little waterwort grows in shallow places on the sandy bottom of White lake, near Forestport. July. J. V. Haberer.

Epipactis viridiflora (Hoffm.) Reichb.

Near Mexico, Oswego co. Miss G. S. Burlingham. This is the fourth locality in our State in which this rare plant has been found. The others are Syracuse, Buffalo and Otisco.

Equisetum hyemale intermedium Eaton

Head of Oneida lake. June. J. V. Haberer.

Equisetum variegatum nelsoni Eaton

Stony flats along West Canada creek. July. J. V. Haberer.

Gyromitra esculenta (Pers.) Fr.

Among damp mosses under balsam fir trees. North Elba. June. This has long been considered an edible species, but sometimes sickness is caused if old specimens or such as are on the point of decay are eaten. It is better to use only young, sound and freshly collected specimens for food.

Hordeum hexastichon L.

A very unusual and interesting form of six rowed barley was collected near Jamestown by Miss J. A. Moses and specimens with notes were contributed by her to the herbarium. In these specimens the usual long awns are replaced by flower buds, the essential floral organs being visible only on dissection. These buds are

erect and in the best developed forms they are terminated by a reflexed flap or scale. On each side at the base is another smaller budlike projection which probably represents the lateral flower that ordinarily stands, one on each side of the central flower at each node. It looks like an effort on the part of the plant to increase the number of its seeds at the expense of its, to us, useless awns. The specimens were collected late in the season—in October—but whether this lateness of growth had anything to do with the peculiar development is uncertain. Other plants of normal form were found growing with these.

Hydnum schiedermayeri Heuf.

Dead trunk of a standing appletree. Keene, Essex co. September.

Ilex verticillata cyclophylla Robins.

Boggy margin of Otter lake, Oneida co. July. J. V. Haberer. Margin of Brant lake, Warren co. C. H. Peck.

Iris pseudacorus L.

This showy yellow flowered iris is an introduced species which is sometimes found growing spontaneously. Fine specimens were collected by Mrs T. J. Leach at the mouth of Salmon river, in Oswego county.

Lactarius brevis Pk.

The typical form of this species has a short stem. Specimens collected near Wading River the past season have stems from 2–2.5 inches long.

Lathyrus maritimus (L.) Bigel.

This seashore plant was reported by Dr Torrey many years ago as occurring at Oneida lake. Dr Haberer finds it still growing about the head of the lake.

Lychnis chalcedonica L.

The scarlet lychnis is often cultivated for its showy flowers and it sometimes escapes from cultivation to roadsides or waste places. But Dr Haberer has found it growing spontaneously on densely wooded slopes near White lake, Oneida co.

Lysimachia vulgaris L.

Along West Canada creek at East Herkimer. July. J. V. Haberer. This is a beautiful plant and is sometimes cultivated for ornament. The calyx lobes are red margined.

Marasmius salignus Pk.

This small mushroom usually grows on the bark of willows as its name implies, but specimens were found near Elm lake, Hamilton co. growing on the bark of alder, Alnus incana.

Marasmius siccus Schw.

A specimen of this species is preserved in the herbarium of Schweinitz in the rooms of the Philadelphia Academy of Science. By an inspection of this specimen it was found that Marasmius campanulatus Pk. is not specifically distinct, but this could not be satisfactorily ascertained from the description given of M. siccus. The species is very variable in the color of the pileus but quite constant in its other characters.

Otidea onotica ochracea Fr.

This peculiar cespitose variety was found in woods near Lake Placid in September.

Peltigera aphthosa (L.) Hoffm.

Clay soil. Tripoli, Washington co. October. S. H. Burnham. The upper surface of these specimens has a variegated appearance which is due to denuded places where the epidermis has apparently been eaten by some small creature thereby revealing the paler yellowish green inner tissues.

Polyporus simillimus Pk.

The name and distinguishing characters of this species were published in *New York State Museum Report* 32, page 34. Its nearest ally, P. parvulus Kl., is now referred to the genus Polystictus, to which genus this species also should be referred. The original specimens were found growing in the same locality as P. parvulus and were scarcely separable from it except by the much smaller pores and different spores. Since then it has been found in many places where no P. parvulus was seen.

Polyporus sulphureus (Bull.) Fr.

An apparent variety of this common species occasionally occurs in which the pores are white instead of sulfur-yellow. For the sake of convenience of reference I propose for it the name Polyporus sulphureus semialbinus Pk. Sometimes the hymenium of this variety is composed of closed cells as in the so called genus Myriadoporus.

Pterospora andromedea Nutt.

This rare saprophytic plant still lingers in a few northern localities. A specimen was collected near Hague, Warren co. by Mrs E. Watrous and contributed to the herbarium. Specimens were also found near Port Henry which were possibly growing in the same station in which the species was found more than 60 years ago.

Puccinia pyrolae Cke.

Horicon, Warren co. This is the second station in the State in which I have found this parasitic fungus. It is doubtless a rare species. No aecidial or uredo form of it was found in either station. The name was given on the supposition that the host plant is a species of Pyrola, but it is Polygala paucifolia.

Salix serissima (Bail.) Fern.

Lake Placid. June. Both staminate and pistillate plants were found growing side by side. In this instance the leaves become acuminate late in the season and more closely resemble the leaves of Salix lucida.

Trametes pini (Brot.) Fr.

The pine trametes was found near Albia, Rensselaer co. growing on pine ties of the electric railroad. The species is rare in our State and probably in this case the mycelium was introduced in the ties.

Trillium grandiflorum (Mx.) Salisb.

A singular monstrosity of the large flowered wake-robin was found near Syracuse and contributed by Mrs L. L. Goodrich. All the floral organs are petaloid or foliaceous, and instead of five whorls of three organs each, which is the usual number, there are 10 whorls of 3 in each. Beginning at the outside or exterior circle we find six green foliaceous organs, which may be taken to represent a double calyx. The next inner circle contains three white petaloid organs each with a green central stripe; then a circle of three green ones, one of which has its margins white. These two whorls may be taken to represent the petals. The third group consists of two circles containing three green organs in each, which represent the usual exterior row of stamens; then there are two circles of three white organs each, which correspond to the usual inner row of stamens. Finally the central group is composed of two circles of green foliaceous organs which may be taken to represent the three-parted pistil of the ordinary flower. This double flowered

trillium is a good illustration of the old and well known theory that floral organs are simply modifications of leaves, for in this single example we find all the floral organs replaced by oblong leaves, some of which retain the usual green color of leaves wholly, some partly and some exhibit wholly the white color so often shown by petals.

Uromyces caricis Pk.

In my examination of the specimens on which this species was founded only single celled spores were found. Later examination by others revealed a few Puccinia spores. This led to the transfer of the species to the genus Puccinia and it now bears the name Puccinia caricis-strictae Diet. A second station in which this somewhat rare species has been found is Round Lake, Saratoga county.

Uromyces peckianus Farl.

Leaves of marsh spike grass, Distichlis spicata (L.) Greene. Port Jefferson. August. This parasitic fungus was formerly referred to Uromyces graminum Cke., but it has been separated and now bears the name here given.

Xyris montana Ries

Abundant in peat bogs along the outlet of White lake, where it forms continuous patches. Xyris caroliniana also occurs in the same locality. July. J. V. Haberer.

EDIBLE FUNGI

Tricholoma unifactum n. sp.

UNITED TRICHOLOMA

PLATE 94, FIG. 1–5

Pileus fleshy but thin, convex, often irregular, sometimes eccentric from its crowded mode of growth, whitish, flesh whitish, taste mild; lamellae thin, narrow, close, rounded behind, slightly adnexed, sometimes forked near the base, white; stem equal or thicker at the base, solid, fibrous, white, united at the base in a large fleshy mass; spores white, subglobose, .00016-.0002 of an inch broad.

The united tricholoma belongs to the section Guttata and is closely related to the northern tricholoma, Tricholoma boreale and to the whitish tricholoma, Tricholoma albellum. From the former it is separated by its different color, mode of growth and lack of odor, and from the latter by its color, the absence of spots on the cap and by its smaller subglobose

spores. The stem and gills are white, the cap is nearly so. It has a watery white appearance when moist. The plants grow in clusters, several stems rising from a large whitish fleshy mass, by which character it is at once distinguished from all our other species of Tricholoma.

The taste is mild and there is no decided odor. The flesh is tender and of excellent flavor when properly cooked. The cap is 1-2 inches broad and the stem 1-2 inches long and 3-5 lines thick. It grows under hemlock trees and was found in Horicon, Warren co. in July.

Lactarius rimosellus n. sp.

RIMULOSE LACTARIUS

PLATE 95, FIG. 1–6

Pileus thin but firm, broadly convex, nearly plane or centrally depressed, dry, azonate, usually with a central papilla or minute umbo, minutely rimulose areolate, vinaceous cinnamon, flesh whitish, milk scanty, watery, taste mild; lamellae thin, narrow, close, decurrent, pallid or yellowish when young, colored nearly like the pileus when mature; stem slender, firm, equal or nearly so, glabrous, hollow, colored like the pileus; spores white, faintly tinged with yellow, subglobose, .0003-.00035 of an inch broad.

The rimulose lactarius is very closely related to the camphory lactarius, Lactarius camphoratus, resembling it in color, size and odor, but differing from it in the rimulose areolate cuticle and specially in its scanty watery milk. It is a small species having a cap that is 10-18 lines broad and a stem about 1 inch long and 2 lines thick. It grows on bare soil in woods or on banks of earth by roadsides. Wading River. August.

Lactarius serifluus (DC.) Fr.

THIN JUICED LACTARIUS

PLATE 95, FIG. 7–11

Pileus fleshy, firm, broadly convex becoming nearly plane or centrally depressed, dry, glabrous, azonate, vinaceous cinnamon, flesh whitish, milk watery, taste mild; lamellae thin, narrow, close, adnate or slightly decurrent, whitish when young, darker when mature; stem mostly short, equal or slightly tapering upward, solid, glabrous, colored like or a little paler than the pileus; spores globose or nearly so, white faintly tinged with yellow, .0003-.0004 of an inch broad.

The thin juiced lactarius has been found by me on Long Island only. It grows among fallen leaves in woods and shaded places and occurs in July and August. Its cap is firm in texture, broadly

convex or nearly plane, usually becoming centrally depressed with age. It is dry, evenly colored of a peculiar brownish fawn or pale vinaceous cinnamon. The European plant is described as having a brownish tawny cap and no odor is attributed to it. In our plant there is a slight pleasant aromatic odor, but in all essential characters the agreement with the description of the European plant is so close that we consider them both to be specifically the same.

The cap is 1.5-3 inches broad, the stem 1-1.5 inches long and 4-6 lines thick.

Russula albida Pk.

WHITISH RUSSULA

PLATE 96, FIG. 1–7

Pileus fleshy, thin, fragile, hemispheric or very convex when young, becoming nearly plane or slightly depressed in the center, slightly viscid when moist, white, often tinged with yellow in the center, even or slightly striate on the margin, flesh white, taste mild or slightly and tardily bitterish and unpleasant; lamellae moderately thin, close, entire, occasionally forked at the base, adnate or subdecurrent, white or whitish, the interspaces often venose; stem equal or slightly tapering upward, glabrous, stuffed or hollow, white; spores white with a faint yellowish tinge, subglobose, .0003-.00035 of an inch long, nearly or quite as broad.

The whitish russula is readily recognized by its color which is wholly white or sometimes varied only by a slight yellowish tinge in the center of the cap, and in the mature or old gills. The thin margin of the cap is sometimes curved upward in old plants and the interspaces between the gills are usually venose. The pellicle of the cap is separable, indicating with the equal gills and fragile texture that the species belongs to the section Fragiles. The slowly developed bitterish or unpleasant flavor of the fresh plant disappears in cooking.

The cap is 1-2 inches broad, the stem 1-3 inches long and 3-5 lines thick. The plants grow among fallen leaves in woods. Specimens have been collected in Rensselaer and Suffolk counties.

Russula flavida Frost

YELLOWISH RUSSULA

PLATE 97, FIG. 1–6

Pileus fleshy, firm, convex or broadly convex becoming nearly plane or centrally depressed, dry, at first even, often becoming slightly striate on the margin when old, chrome-yellow, sometimes

cadmium-yellow or orange in the center, flesh white, taste mild; lamellae rather thick, moderately close, entire or nearly so, adnate, white; stem equal or slightly tapering upward, solid, sometimes becoming spongy within and occasionally cavernous, colored like or a little paler than the pileus; spores yellowish, subglobose, .0003 of an inch long, nearly or quite as broad.

The yellowish russula is a very beautiful and an attractive species and it is very gratifying to find it edible. It is easily recognized by its color, for, though other species have the cap yellow, not many have both the cap and stem yellow, and none of these has them of the same shade of yellow as this. The cap is dry and the epidermis frequently breaks into minute mealy or granular yellow particles, indicating that the species belongs to the section Rigidae. The color often fades with age and sometimes the margin becomes white. The gills in the fresh plant are white but with age or in drying they often become dingy or assume a clay color. The interspaces are uneven with transverse veins. The stem is often a little paler than the cap, but it is usually more highly colored at the base than elsewhere. The mycelium appears to be of an orange color.

The caps are 2-3 inches broad, the stem 1.5-3 inches long and 4-8 lines thick. This mushroom grows in grassy places among bushes or in woods and may be found in July and August. It is not common.

Russula sordida Pk.

SORDID RUSSULA

PLATE 98, FIG. 1–5

Pileus fleshy, firm, convex becoming centrally depressed, dry, even on the margin, sordid white becoming smoky brown with age, flesh grayish white becoming blackish brown where cut or broken, taste mild or sometimes tardily acrid; lamellae about equal in width to the thickness of the flesh, close, adnate or slightly decurrent, unequal, sometimes forked, white; stem short, firm, equal, solid, white, changing color like the pileus; spores white, globose, .0003 of an inch broad.

The sordid russula is a large unattractive species, but when fresh specimens free from larvae are fried in butter they make an excellent and relishable dish. It belongs to the section Compactae of which we have no species with a truly red cap, though the cap of Russula compacta Frost makes an approach to it. The cap of this species in young plants is nearly white, but

it is soon stained with smoky brown patches, and with advancing age the whole surface assumes this color. In old age or in drying the whole plant becomes black. The flesh is compact but brittle, grayish white quickly changing to blackish brown when cut or broken and exposed to the air. The white gills and stem also undergo the same change in color as the cap when subjected to the same conditions. In comparatively young specimens it often happens that when the stem is split longitudinally the center will be found full of the perforations of insect larvae and the injured tissues all blackened. This mushroom closely resembles two other nearly related species, Russula nigricans and R. densifolia. From the first it may be separated by its dry cap, its closer gills and by its wounded places assuming a blackish color without any intervening reddish hue. From the second also this last character will distinguish it, for in both these species wounded places first change to a reddish color and afterward to a black or blackish color.

The cap is 3-6 inches broad, the stem 1-2 inches long and 6-12 lines thick. This mushroom grows under hemlock trees and appears during July if the weather is sufficiently rainy.

Russula subsordida n. sp.

SUBSORDID RUSSULA

PLATE 99, FIG. 1–5

Pileus fleshy, firm, convex becoming nearly plane or centrally depressed, glabrous, viscid when moist or young, even on the margin, whitish becoming smoky brown with age, sometimes with an olive-green tint, flesh grayish white, slowly changing to a darker or smoky brown color when cut or broken, taste mild or tardily and slightly acrid; lamellae thin, close, adnate, with many short ones intermingled, whitish; stem short, firm, glabrous, spongy within or sometimes cavernous, white slowly becoming smoky brown where wounded; spores white, globose, .0003 of an inch broad.

The subsordid russula is very similar to the sordid russula and grows in similar places. It is sometimes associated with it, growing in the same locality and at the same time. Hitherto it has been found in Horicon only, but occurred there in several stations. It may be distinguished from the sordid russula by its viscid cap which is also less white when young, by its less white gills and by its wounds more slowly assuming the smoky brown hue. Both

are equally good to eat and equally unattractive in appearance. Both are apparently equally acceptable to insect larvae and both become black or nearly so in drying.

Russula viridella n. sp.

PALE GREEN RUSSULA

PLATE 100, FIG. 1–7

Pileus firm, subglobose, hemispheric or very convex, becoming nearly plane or centrally depressed, sometimes nearly funnelform, even on the margin, dry, soon minutely squamulose or furfuraceous, specially toward the margin, pale grayish green, generally smooth and paler or subochraceous in the center, flesh white, taste acrid; lamellae thin, narrow, close, some of them forked, occasionally anastomosing at the base, a few short ones intermingled, white; stem equal or nearly so, even, solid or spongy within, white; spores white tinged with yellow, globose or subglobose, .00024-.0003 of an inch long, nearly as broad; cystidia subfusiform, .0025-.003 of an inch long, .0006 broad.

The pale green russula is related to the greenish russula, Russula virescens, and has nearly the same colors, but it may be separated from the greenish russula by the minute squamules or fragments of the epidermis of the cap, the thinner and closer gills and by its acrid taste. When the cap is viewed in a certain light it has a pruinose appearance. The white gills are closely placed side by side and are sometimes connected with each other by transverse branches near the base. The stem is nearly cylindric, solid and white. It is very susceptible to the attacks of insect larvae and is often found perforated by them even in young plants. The acrid flavor of the fresh mushroom is destroyed by cooking.

The cap is 2.5-4 inches broad, the stem 2-3 inches long, and 5-8 lines thick. This species grows under hemlock trees and appears in July. It is gregarious and Horicon is at present the only locality where it has been found. It belongs to the section Rigidae. It is a fine addition to our mycological flora and to our list of edible mushrooms.

Russula variata Banning

VARIABLE RUSSULA

PLATE 101, FIG. 1–5

Pileus firm, convex becoming centrally depressed or somewhat funnelform, viscid, even on the thin margin, reddish purple or brownish purple often variegated with green, pea-green sometimes

varied with purple, flesh white, taste acrid or tardily acrid; lamellae thin, narrow, close, often forked, tapering toward each end, adnate or slightly decurrent, white; stem equal or nearly so, solid, sometimes cavernous, white; spores white, subglobose, .0003-.0004 of an inch long, .0003 broad.

The variable russula is appropriately named for its caps are very variable in color. They are dark purple or reddish purple variously intermingled or variegated with green, or wholly pale green. The viscid pellicle is closely attached to the cap in the center but it is separable on the margin. In drying it sometimes forms obscure spots. Notwithstanding the variations in the color of the caps, the species is easily recognized for the gills are very constant in their characters. Their narrowness, closeness and numerous bifurcations are peculiar and very constant features. They are sometimes slightly decurrent, specially in mature specimens whose upcurved margin gives the cap a more or less funnel shape. The stem is white and solid or sometimes with central cavities arranged one above another.

The cap is 2-4 inches broad, the stem 1.5-3 inches long, 5-8 lines thick. This mushroom grows in woods and appears during July and August. It belongs to the section Furcatae, as shown by the even margin of the cap and the gills tapering toward each end. The acrid taste of the fresh cap is destroyed in cooking and the flavor is then very good.

Clavaria conjuncta n. sp.

CONJOINED CLAVARIA

PLATE 102, FIG. 1–3

Stems united at the base, forming tufts 3-5 inches tall and nearly as broad, fragile, solid, glabrous, white or whitish, divided above into numerous erect, crowded, solid branches which are whitish or pale buff, ultimate branchlets terminating in two or more blunt points which are pale pink, sometimes with a yellowish tinge, flesh white, taste mild; spores dingy yellow in a thin stratum, subochraceous in a thick one, oblong, .0004-.0005 of an inch long, .00016-.0002 broad.

The conjoined clavaria is a large tufted and attractive species closely related to Clavaria flava on one hand and to C. botrytoides on the other. From the first it may be distinguished by the pinkish tips of the branchlets, from the second by their paler color and greater permanence and from both by the

larger spores. It is similar to both in its fragile tender flesh and pleasant flavor. It grows among fallen leaves in woods. It was found at Bolton Landing, Warren co. which yet remains its only known locality.

Hypomyces lactifluorum (Schw.) Tul.

RED HYPOMYCES

PLATE 103, FIG. 1–7

Subiculum thin, at first whitish, soon orange or cinnabar-red, effused over the surface of the host plant, transforming, hardening and deforming it and changing its color so that it is rarely recognizable; perithecia minute, abundant, sunk in the subiculum and appearing like minute red dots on the surface, becoming brown or blackish with age or in drying; asci slender, linear; spores white in the mass, monostichous, oblong fusiform, pointed or cuspidate at each end, uniseptate, .0015-.0018 of an inch long, .0003 broad.

The red hypomyces is a puzzling fungus to the young mycologist. It is one very frequently received at the office with inquiries concerning its name and nature. Its bright color makes it an attractive object, but its very irregular and inconstant shape makes it difficult to locate in any known genus of mushrooms. It really is a parasitic fungus and it and its host plant are so intimately united that they are taken by the inexperienced to be one thing. The parasite attacks and lives upon some of the fleshy mushrooms, changing their form, color and texture so much as to obliterate or disguise their characters and render them almost unrecognizable. The original specimens described by L. D. Schweinitz are said by him to be parasitic on species of Lactarius, specially L. piperatus. It is now known that the parasite sometimes attacks also the chantarelle, Cantharellus cibarius Fr. as shown by specimens but partly developed and slightly changed.

The parasite hardens the flesh of the host plant and makes it more dry, firm and crisp, but it is not tough. It is generally free from insect larvae, inviting in appearance and, though not highly flavored, is relishable and perfectly harmless. It needs thorough cooking and proper seasoning to make it most satisfactory. The host plant really furnishes the most of the material eaten. The parasite, the red hypomyces, forms but a thin layer over the surface of the host plant. By peeling away all the red part and cooking only the white interior the dish would be composed entirely of the flesh of the host. By utilizing the red part only, that is the hypomyces, the quantity would be so small as scarcely to be worthy of consideration.

The attack by the parasite must be made early in the development of the host, for it is already discolored and deformed when it has but partly emerged from the ground. The spores of the parasite probably pass the winter in the ground and germinate when, by the early development of the host or by other causes, they are brought in contact with it. Usually the parasite fruits on the hymenium and stem of the host and these parts therefore are dotted by the mouths of the perithecia of the parasite and more highly colored than the upper surface. Still, the change of color of the upper surface shows that the influence of the parasite extends to it.

SPECIES OF CRATAEGUS FOUND WITHIN TWENTY MILES OF ALBANY

BY C. S. SARGENT AND C. H. PECK

Early in 1902 Prof. C. S. Sargent informed the writer that he had noticed some fine patches of thorn bushes a short distance west of Albany and suggested that it might be well to examine them. The suggestion was promptly adopted and this paper is one of the results of that suggestion. At that time three species and their supposed varieties constituted the known Crataegus flora of the territory now under consideration. At the present time 54 native and one introduced species are known to be included in it. This territory is bounded by a circumference which has Albany for its center and a line 20 miles long for its radius. Only certain portions of the northern half of this circle have been carefully explored. These parts or localities may be named and described as follows.

North Albany lies just north of the city and is bounded on the north by Ford road, east by Troy road, south by North First street and west by the road running north from Loudonville road to the junction of Ford road with Northern boulevard.

West Albany includes Tivoli hollow and its adjoining hillsides. It lies on both sides of the New York Central & Hudson River Railroad tracks between the city of Albany and the railroad shops at West Albany.

Menands includes the territory between the outlet of Little's pond on the north and Ford road on the south, and between the Erie canal on the east and the northern extension of the Boulevard from Ford road to Little's pond on the west. It includes the canal lot, Troy road and tollgate localities, Golf ground and Boulevard pasture.

North Greenbush lies east of the Hudson river and extends north from Forbes avenue 1 mile and east from the river about ½ mile. It includes Forbes manor grounds.

Greenbush includes the hillsides east of Rensselaer and between Nassau road on the south and the old red mill creek on the north. It is divided into two parts by a ravine and small stream.

Watervliet is used to designate the hills and valley of Dry river just west of the city of Watervliet. It has not been thoroughly explored.

Lansingburg is a small area extending north from the car barns about ½ mile and east from the Hudson river scarcely more than 2 furlongs. It is a small area but one rich in species. It contains one species not yet found elsewhere, and two found in no other place within the limits covered by this essay.

Albia is used to designate a small strip of land lying between the electric road and the Wynantskill creek about 2 furlongs south of the Albia car station.

Wynantskill designates a strip of land along the Sand Lake turnpike, beginning at the junction of the Poestenkill road and running south about 1 mile.

Sand Lake is used in this article to designate a comparatively small part of the town of that name, lying near its center and about 10 miles east of Albany. One species is peculiar to this locality and four are found in a single rocky pasture.

Thompson Lake designates a narrow strip of territory lying along the western and southeastern shore of the lake of that name. It is about 18 miles in a direct line west from Albany. Crataegus dilatata Sarg. occurs here, but is not known to be elsewhere in our present limits.

Hillsides, ravines and the margins of lakes and streams are favorite habitats of species of Crataegus. Those in the immediate vicinity of Albany grow for the most part in clayey soil. A few grow apparently in sandy soil but in some places the sand forms a thin stratum over clay and it is possible that the roots of the thorn bushes may penetrate to the clay. In the Lansingburg locality the soil is a shaly loam formed by the disintegration of Hudson River shales. This soil is apparently very suitable to species of the group Intricatae. All of the five species of this group known to occur in our State are found here. One of these has yet been found in no other place.

The peculiar tendency of species of Crataegus to flock together is strikingly illustrated in our territory. It is rare to find any large area occupied by a single species. Where many thorn trees and bushes grow together there are usually many species. A remarkable example of this kind is found in a narrow strip of pasture

land bordering the Erie canal near Menands. Here 10 species are growing in an area of about 1 acre. The closest condensation of numerous species that I have seen anywhere is near Albia where nine of our native species are growing in a kind of irregular row along the west bank of the Wynantskill creek. The length of the row is about 100 feet. It is also worthy of remark that three of these species, Crataegus ferentaria, C. rhombifolia and C. succulenta, belong to the group Tomentosae. Such close associations of members of a single group as this and the one at Lansingburg are very significant and when more fully understood may possibly throw some light on the interesting problem of the development of species.

Rochester and its vicinity, with 41 species, are justly thought to be unusually prolific in species of Crataegus, but Albany and its vicinity surpass even that rich Crataegus center in the number of its known species.

From the synoptic table here given, the range of each species and the number of species in each locality can easily be ascertained.

Crataegus tomentosa, which has not recently been found in our limits, and Crataegus oxyacantha, which is growing spontaneously in the North Albany locality, but which is an introduced species, are omitted from the table.

SYNOPTIC TABLE

	North Albany	West Albany	Menands	North Greenbush	Greenbush	Watervliet	Lansingburg	Albia	Wynantskill	Sand Lake	Thompson Lake
Crataegus											
acclivis	+	...	+	...	...	...	...	...	...	...	...
acuminata	+	+	...	...	...	...	...	...	...	...	...
ambrosia	...	...	+	...	...	...	...	...	...	...	...
ascendens	...	...	...	...	...	...	...	...	...	...	+
asperifolia	...	...	+	...	...	...	...	...	...	...	...
beckiana	...	...	...	+	...	...	...	...	...	...	...
casta	...	...	...	+	...	...	...	...	...	...	...
caesariata	+	...	...	...	...	...	...	...	+	...	...
champlainensis	+	...	+	+	...	...	...	...	...	...	...
coccinea	+	...	...	...	...	...	...	...	...	...	...
" rotundifolia	...	...	...	...	...	+	...	+	+	...	...
conjuncta	+	+	+	+	+	...	+	...	...	...	...
conspicua	...	...	+	...	...	...	...	...	...	...	...
contortifolia	+	+	+	+	...	...	...	...	...	...	...
crus-galli	+	+	+	+	+	+	...	...	...	...	...
delucida	+	+	+	...	...	...	...	...	...	...	...
demissa	...	+	+	...	+	...	...	+	...	...	...
dilatata	...	...	...	...	...	...	...	...	...	...	+
dissona	+	+	...	...	+	+	+	...	...	...	+
divergens	...	...	...	+	...	...	...	...	...	...	...
dodgei	+	+	+	...	...	...	+	...	...	...	...
durobrivensis	+	+	...	...	...	...	...	...	...	...	...
eatoniana	...	...	+	...	...	...	...	...	...	...	...
edsoni	...	...	...	...	...	...	+	...	...	...	...
exclusa	+	...	+	...	+	...	...	+	...	...	...
ferentaria	+	...	...	...	...	...	...	+	...	...	...
flagrans	...	...	...	+	...	...	...	...	...	...	...
foetida	+	...	...	...	...	+	+	...	...	...	...
gemmosa	...	...	+	...	...	...	...	...	...	...	...
genialis	+	+	+	+	+	+	...	+	+	+	...
halliana	+	...	+	...	...	...	...	...	...	...	...
helderbergensis	...	...	...	...	...	...	...	...	...	...	+
holmesiana	+	+	+	+	...	+	...	+	...	...	+
howeana	+	...	+	...	...	...	...	...	...	...	...
hudsonica	...	+	+	...	+	...	...	...	...	...	...
hystricina	...	...	...	...	...	...	...	...	...	...	+
illuminata	+	+	...	+	...	...	...	...	...	...	...
intricata	+	+	+	...	+	+	+	...	...	...	...
lobulata	...	...	+	...	...	...	...	...	...	...	...
mellita	...	...	...	...	...	...	...	...	...	+	...

SYNOPTIC TABLE (*continued*)

	North Albany	West Albany	Menands	North Greenbush	Greenbush	Watervliet	Lansingburg	Albia	Wynantskill	Sand Lake	Thompson Lake
Crataegus (*continued*)											
menandiana	...	...	+	...	...	...	...	...	...	...	...
modesta	+	+	+	...	+	+	+	...	...	...	...
oblongifolia	...	...	+	...	...	...	...	...	...	...	...
peckii	...	...	...	...	...	...	+	...	...	...	...
pentandra	...	...	+	+	+	...	...	...	...	...	...
polita	...	...	...	...	...	...	...	...	...	+	...
pruinosa	+	+	+	...	...	...	+	...	...	...	...
punctata	+	+	+	+	+	+	+	+	...	+	...
" aurea	+	+	+	+	...	...	...	...	...	...	...
" canescens	...	...	...	+	...	...	...	...	...	...	...
rhombifolia	+	+	...	...	...	...	...	+	...	...	+
robbinsiana	...	+	...	...	+	...	...	...	...	+	...
rubrocarnea	+	...	...	...	...	...	...	...	...	...	...
sejuncta	...	+	...	...	...	...	...	...	...	...	+
spissiflora	...	...	+	...	...	...	...	...	...	...	...
succulenta	+	...	...	...	...	...	...	+	...	...	...
verecunda	...	...	...	...	...	...	+	...	...	...	...
54	27	20	28	13	12	9	11	9	3	5	8

CRUS-GALLI

Stamens 10

Anthers rose color

Crataegus crus-galli Linnaeus

Spec. 476 (1753).—Sargent, Silva N. Am. iv. 91, t. 178; Man. 368, f. 286.

North Albany, West Albany, Menands, North Greenbush, Greenbush and Watervliet. Common. Charles H. Peck.

Stamens 10-14

Anthers white, sometimes faintly tinged with pink

Crataegus helderbergensis n. sp. Sarg.

Leaves obovate, to nearly oval on leading shoots, rounded or rarely acute or short-pointed at the apex, gradually narrowed downward from near the middle, concave cuneate and entire below, coarsely and often doubly serrate above, with straight glandular teeth, more than half grown when the flowers open during the first week in June, and then membranaceous, dark yellow green and covered on the upper surface with short pale hairs and sparingly villose pubescent below along the midribs and veins, at maturity subcoriaceous to coriaceous, glabrous, dark green and very lustrous above, pale yellow green and still pubescent below, 4-6 cm long and 3-4 cm wide, with narrow prominent orange-colored midribs often tinged with red below toward the base, and four or five pairs of slender primary veins without the parenchyma and extending obliquely to above the middle of the leaf; petioles stout, wing-margined to below the middle, villose along the upper side while young, becoming nearly glabrous, occasionally glandular, with bright red stipitate caducous glands, 1-1.2 cm in length, leaves on vigorous shoots mostly obovate, rather broader in proportion to their length, often 7-8 cm long and 5 cm wide. Flowers 1.3-1.5 cm in diameter, on slender elongated densely villose pedicels, in usually 15 to 20–flowered hairy corymbs, with linear bracts and bractlets, fading red and mostly deciduous before the flowers open; calyx tube narrowly obconic, covered specially toward the base, with long matted white hairs, the lobes slender, acuminate, glandular serrate, with minute dark red stipitate glands, bright green and glabrous on the outer and villose pubescent on the inner surface, reflexed after anthesis; stamens 10 to 14, usually 10; anthers white, rarely faintly tinged with pink; styles two or three. Fruit ripening from the first to the middle of October and persistent till after the leaves have fallen, on long slender

villose pedicels, in few-fruited drooping clusters, short-oblong to obovate, full and rounded at the apex, gradually narrowed to the base, crimson, lustrous, marked by occasional dots, about 1 cm long and 8 mm wide; calyx little enlarged, with a short tube, a narrow deep cavity, and spreading or reflexed glandular serrate lobes pubescent on the upper side and often deciduous from the ripe fruit; flesh thin, dry and mealy, yellow or orange color; nutlets 2 or 3, full and rounded at the ends, ridged on the back, with a broad often grooved ridge, 8-9 mm long and 4-5 mm wide.

A tree 2-3 m high, with a short stem 5-10 cm in diameter, wide-spreading mostly horizontal branches forming a flat topped head, the stout zigzag branchlets bright orange color and coated with long matted white hairs when they first appear, becoming glabrous, orange or reddish brown and lustrous during their first season and ashy gray the following year, and armed with many slender straight or slightly curved bright purplish or chestnut-brown shining spines often pointing toward the base of the branch and 4.5-7 cm long.

Near Thompson Lake, Helderberg region, Charles H. Peck (#76n, type), June and September 1903, 1904.

Easily distinguished from the other northern species of this group by the nearly white anthers, by the exceedingly villose pedicels, the villose pubescent underside of the midribs and veins, and from several southern and southwestern species with hairy inflorescence, by the shape of the leaves and the character of the fruit.

PUNCTATAE

Stamens 20

Anthers rose color or yellow

Crataegus punctata Jacquin

Hort. Vind. i. 10, t. 28 (1770).—Sargent, Silva N. Am. iv. 103, t. 184; Man. 389, f. 308.

North Albany, West Albany, Menands, Albia, Greenbush, North Greenbush, Watervliet and Sand Lake. Very common. Charles H. Peck.

Crataegus punctata var. **aurea** Aiton

Hort. Kew. ii. 170 (1789).

North Albany, West Albany, Greenbush, North Greenbush, Menands, Charles H. Peck.

Crataegus punctata var. **canescens** Britt.

Bul. Torrey Bot. Club, xxi. 231 (1894).—Sargent, Man. 389.

North Greenbush, Charles H. Peck.

Anthers pale pink

Crataegus eatoniana n. sp. Sarg.

Leaves ovate to obovate, acute and often short-pointed at the apex, gradually or rarely abruptly narrowed to the concave cuneate entire base, finely doubly serrate, with straight or incurved glandular teeth, and usually slightly divided into four or five pairs of narrow acuminate lateral lobes, nearly fully grown when the flowers open the middle of May and then membranaceous, light yellow green, smooth and glabrous on the upper surface with the exception of a slight pubescence along the midribs and veins, pale and slightly hairy along the midribs and veins below, at maturity thin but firm in texture, dark bluish green and glabrous above, pale yellow green and almost glabrous below, 5.5-8 cm long and 4.5-5.5 cm wide, with stout yellow midribs and slender primary veins extending obliquely to the points of the lobes; petioles slender, wing-margined at the apex, slightly grooved and puberulous on the upper side, becoming glabrous, 1.5-3 cm in length. Flowers about 1.5 cm in diameter, on stout glabrous pedicels, in wide many-flowered corymbs, the lower peduncles from the axils of upper leaves, with obovate to linear obovate or linear bracts and bractlets glandular serrate toward the apex and persistent till after the flowers open; calyx tube narrowly obconic, glabrous, the lobes slender, red and glandular at the acuminate apex, entire or occasionally sparingly glandular toward the base, glabrous on the outer and slightly hairy on the inner surface; stamens 16 to 20; anthers pale pink; styles two or usually three. Fruit on slender drooping red pedicels, in usually 5 to 10-fruited clusters, short-oblong to depressed-globose, full and rounded at the apex, slightly narrowed and rounded at the base, bright cherry-red, lustrous, marked by small pale dots, 1.2-1.4 cm long and 1-1.2 cm wide; calyx prominent, with a broad deep cavity and spreading appressed lobes mostly deciduous from the ripe fruit; flesh thick, dry and mealy, tinged with red; nutlets two or three, full and rounded at the apex, ridged on the back, with a broad rounded ridge, 6-7 mm long and about 5 mm wide.

A shrub 3-4 m high, with many erect stems covered with dark brown bark and spreading into thickets, stout branches, the lower spreading, the upper ascending, and slender nearly straight branchlets marked by oblong pale lenticels, dark orange color and slightly hairy when they first appear, soon glabrous, bright red brown and lustrous during their first winter and dull gray brown the following year, and armed with slender straight or

slightly curved bright chestnut-brown shining ultimately gray spines 3-4.5 cm long, much elongated and branched on old stems and large branches.

Menands, Golf grounds, Charles H. Peck (♂ 3. tgm, type). May and October.

This species is named in memory of Amos Eaton (1776-1842), principal and senior professor in the Rensselaer Polytechnic Institute of Troy and author of the *Manual of Botany of North America*.

PRUINOSAE

Stamens 20

Anthers rose color

Crataegus pruinosa K. Koch

Verhandl. Preuss. Gart. Verein. neue reihe, i, 246 (1874).—Sargent, Silva N. Am. xiii. 61, t. 648; Man. 411, f. 331.

Lansingburg, Peck and Sargent, August 1905.

Anthers pale pink

Crataegus howeana n. sp. Sarg.

Leaves ovate, acute or acuminate, full and rounded or gradually narrowed and cuneate at the entire base, finely and often doubly serrate above, with straight glandular teeth, and usually slightly divided into three or four pairs of spreading acuminate lateral lobes, nearly half grown when the flowers open about the middle of May and then membranaceous, light yellow green, smooth and sparingly pubescent along the midribs above and pale and glabrous below, at maturity thin, glabrous, blue green, dark and dull on the upper and paler on the lower surface, 3-4 cm long and 2.5-3 cm wide, with slender midribs and thin primary veins extending to the points of the lobes; petioles slender, slightly wing-margined at the apex, glandular, with occasional minute, dark, often persistent glands, 1.4-2 cm in length; stipules linear, acuminate, finely glandular serrate, fading red, caducous; leaves on vigorous shoots broadly ovate to nearly orbicular, full and rounded or truncate at the base, more coarsely serrate and more deeply lobed, 5-6 cm long and wide, with reddish, often conspicuously glandular petioles 2-3 cm in length. Flowers 1.3-1.8 cm in diameter, on slender glabrous pedicels, in 5 to 10-flowered corymbs, with linear to linear obovate glandular rose-colored bracts and bractlets often persistent till after the flowers open; calyx tube broadly obconic, glabrous, the lobes abruptly narrowed from wide bases, acuminate, short, entire, tipped with dark red glands, reflexed after anthesis;

stamens 20; anthers pale pink; styles three to five. Fruit ripening about the 20th of October and soon falling, on long slender drooping pedicels, usually in five to seven-fruited clusters, globose to depressed-globose, angular reddish and pruinose when fully grown, becoming scarlet and lustrous at maturity, 1.3-1.5 cm in diameter; calyx prominent, with a short tube, a wide shallow cavity, and spreading lobes dark red on the upper side below the middle, their tips usually deciduous from the ripe fruit; flesh thin, reddish, of a pleasant flavor; nutlets three to five, full and rounded at the base, acute or rounded at the apex, very prominently ridged on the back, with a broad deeply grooved ridge, 7-8 mm long and about 5 mm wide.

An intricately branched shrub 3-5 m high, with several stout ascending and spreading stems covered below with dark brown scaly bark, and stout zigzag branchlets marked by numerous small lenticels, dark orange-green and glabrous when they first appear, becoming light red brown in their first winter and brown or ashy gray the following year, and armed with many small straight red brown spines 2-3 cm long.

Menands, Troy road, Albany co., Charles H. Peck (#75, type), May and October 1903; North Albany, (#4 B), May and October 1903, June 1904.

This species is named in memory of Elliot C. Howe (1828-1899), author in connection with Dr H. C. Gordinier of a *Flora of Rensselaer County* [*see* Bul. Torrey Bot. Club, xxvi. 251].

Crataegus casta n. sp. Sarg.

Leaves ovate to oval, acuminate, gradually or abruptly narrowed and concave cuneate or broad and rounded at the entire base, sharply doubly serrate above, with straight glandular teeth, and slightly divided into numerous small acuminate spreading lobes, nearly half grown when the flowers open the middle of May and then membranaceous, light yellow green and glabrous with the exception of a few hairs at the base of the upper side of the midribs, at maturity thin, light blue green, smooth and lustrous on the upper and dull blue green on the lower surface, 5-6 cm long and 4-5 cm wide, with thin yellow midribs, and four or five pairs of slender primary veins extending obliquely to the points of the largest lobes; petioles slender, slightly wing-margined at the apex, sparingly villose on the upper side while young, soon glabrous, 2-3.5 cm in length. Flowers about 1.5 cm in diameter, on slender glabrous pedicels, in usually five to six-flowered compact corymbs, with

lanceolate acuminate glandular rose-colored bracts and bractlets; calyx tube broadly obconic, glabrous, the lobes gradually narrowed from wide bases, acuminate, entire or slightly glandular serrate near the middle, glabrous, reflexed after anthesis; stamens 20; anthers pale pink; styles usually 3. Fruit ripening early in October, on short stout erect or drooping pedicels, in usually three or four-fruited clusters, obovate, rounded at the apex, narrowed toward the usually pointed base, bright cherry-red, covered with a glaucous bloom, marked by occasional small pale dots, 1-1.3 cm long and 8-10 mm wide; calyx prominent, with a short distinct tube, a broad shallow cavity, and spreading closely appressed lobes dull red on the upper side below the middle and mostly persistent on the ripe fruit; flesh thin, light yellow, dry and mealy; nutlets three, full and rounded at the base, gradually narrowed and acute at the apex, rounded and sometimes slightly and irregularly ridged on the back, light colored, 6-7 mm long and about 5 mm wide.

A shrub 2-3 m high, with numerous ascending stems and slender nearly straight branchlets marked by small dark lenticels, dark orange color when they first appear, becoming bright chestnut-brown and very lustrous in their first winter and dull gray brown the following year, and armed with slender nearly straight purplish shining spines 2.5-3 cm long.

Borders of woods at the margins of the bottom lands of the Hudson river at North Greenbush, Charles H. Peck (#23ng, type) May and October 1904; Peck and Sargent, August 1905.

Anthers white

Crataegus conjuncta Sarg.

Rhodora, v. 57 (1903).

North Albany, West Albany, Greenbush, North Greenbush, Lansingburg, Menands, Charles H. Peck (#14, 18, 57), May, June and October 1903 and 1904. Common; also southern New England to Illinois.

Stamens 10 or less

Anthers rose color

Crataegus dissona Sarg.

Rhodora, v. 60 (1903).

North Albany, West Albany, Greenbush, Lansingburg, Thompson Lake, Watervliet, Charles H. Peck (#171), May and October 1903; also southern New England to eastern Pennsylvania and northern Illinois.

Crataegus robbinsiana Sarg.

Rhodora, vii. 197 (1905).

West Albany, Greenbush, Sand Lake, Charles H. Peck (# 32, 112), May and October 1903 and 1904; also in western and southern Vermont and western New Hampshire.

TENUIFOLIAE

Stamens 5-10

Anthers rose color

Crataegus pentandra Sarg.

Rhodora, iii. 25 (1901); Silva N. Am. xiii. 129, t. 681.

West Albany (# 100), North Greenbush (# 152 with very narrow long stalked leaves and small fruit on long pedicels), Menands, Troy road (# 58 tr), Charles H. Peck, May and September 1903; also common in western New England.

Crataegus genialis Sarg.

Rhodora, v. 148 (1903).

North Albany, West Albany, Greenbush, North Greenbush, Menands, Sand Lake, Albia and Watervliet. Common. Charles H. Peck (# 13, 19, 88), May and September 1902; also in western New England.

Crataegus demissa Sarg.

Rhodora, v. 139 (1903).

West Albany, Greenbush, Albia. Rare. Charles H. Peck (# 89), May and September 1904; also in Gansevoort, Saratoga co. and in western Massachusetts and Vermont.

Crataegus delucida Sarg.

Rhodora, v. 139 (1903).

Hills; North Albany, West Albany and Menands. Very common and the prevailing species. Charles H. Peck (# 3 B, 36), May, September and October 1902; also in western Vermont.

Crataegus rubrocarnea n. sp. Sarg.

Leaves ovate, acute, gradually or abruptly narrowed and cuneate or occasionally broad and rounded at the base, finely, often doubly serrate, with straight slender glandular teeth, and slightly divided into four or five pairs of narrow acuminate lateral lobes, about half grown when the flowers open from the 10th to the 15th of May and then membranaceous, light yellow green and covered above by short white hairs, pale and glabrous below, at maturity thin, dark yellow green and glabrous on the upper and pale or glaucous on the

lower surface, 5-7 cm long and 4-6 cm wide, with slender yellow midribs, and thin primary veins arching obliquely to the points of the lobes; petioles slender, slightly wing-margined at the apex, nearly terete, sparingly glandular, 2-3 cm in length; leaves on vigorous shoots more coarsely serrate and more deeply lobed, usually 7-8 cm long and 6-7 cm wide. Flowers 1.5-1.7 cm in diameter, on short slender pedicels, in long-branched many-flowered compact corymbs; calyx tube narrowly obconic, glabrous, the lobes slender, acuminate, glabrous, minutely glandular serrate, reflexed after anthesis; stamens seven or eight, or occasionally 10; anthers purple; styles two or three, surrounded at the base by a broad ring of pale tomentum. Fruit ripening and falling early in October, on slender drooping reddish pedicels, in few-fruited clusters, short-oblong to subglobose, scarlet, lustrous, marked by occasional dark dots, 1.2-1.4 cm in diameter; calyx little enlarged, with a deep narrow cavity and closely appressed lobes, dark red on the upper side toward the base and mostly persistent on the ripe fruit; flesh thick, juicy, dark red; nutlets two or three, gradually narrowed and acute at the ends, ridged on the back, with a high broad deeply grooved ridge, 6-7 mm long and about 5 mm wide.

A shrub 3-4 m high, with erect stems covered below with blackish or grayish black bark, widespreading and ascending branches, and slender nearly straight branchlets marked by small pale lenticels, orange-green and glabrous when they first appear, becoming bright chestnut-brown and lustrous in their first winter and dull gray brown the following year, and armed with numerous stout slightly curved bright chestnut-brown and shining spines, 3.5-4 cm long.

Hillsides in clay soil; North Albany, Charles H. Peck (#56, type), May, August and September 1904, 1905.

Well distinguished by its large nearly globose fruit with red succulent flesh.

Crataegus acuminata n. sp. Sarg.

Leaves ovate or oblong-ovate, long-pointed and acuminate at the apex, gradually narrowed and concave cuneate or broad, rounded or subtruncate at the entire base, finely doubly serrate above, with incurved glandular teeth, and deeply divided into three to five pairs of narrow acuminate mostly spreading lateral lobes, more than half grown when the flowers open from the middle to the 20th of May and then membranaceous, light yellow green and covered above by short white hairs, pale and glabrous below, at maturity thin, glabrous, dark yellow green and somewhat lustrous on the upper and pale on the lower surface, usually 4.5-5 cm long and

2-3 cm wide, or occasionally 6-7 cm long and 4-5 cm wide, with thin yellow midribs and slender primary veins arching obliquely to the points of the lobes; petioles very slender, slightly wing-margined at the apex, nearly terete, glandular, with occasional scattered glands, glabrous, 1.5-2 cm in length; leaves on vigorous shoots rounded, truncate or abruptly cuneate at the broad base, coarsely serrate, more deeply lobed, often 7-8 cm long and 5-6 cm wide. Flowers on slender glabrous pedicels, in usually five to eight-flowered corymbs; calyx tube narrowly obconic, glabrous, the lobes slender, acuminate, glabrous, entire or sparingly glandular near the middle, reflexed after anthesis; stamens seven or eight; filaments persistent in fruit; anthers dark red; styles three or four, surrounded at the base by a narrow ring of pale tomentum. Fruit ripening from the first to the middle of September, on elongated slender pedicels, in few-fruited drooping clusters, short-oblong to subglobose, full and rounded at the ends, crimson, lustrous, 1-1.2 cm long, 8-9 mm wide; calyx little enlarged, with a wide deep cavity and narrow closely appressed entire or slightly serrate lobes dark red on the upper side below the middle and usually persistent on the ripe fruit; flesh yellow, juicy, of excellent flavor; nutlets three or four, usually three, gradually narrowed and rounded at the ends, slightly ridged on the back, with a low rounded ridge, about 6 mm long and 4 mm wide.

A shrub 3-4 m high, with slender suberect or diverging stems, slender nearly straight branchlets marked by numerous small dark lenticels, light orange-green and glabrous when they first appear, light chestnut-brown and lustrous during their first winter, becoming dull gray brown in their second year, and armed with numerous slender curved chestnut-brown shining spines 2-3 cm in length.

West Albany (east side) and North Albany, Charles H. Peck (# 93 wa, type), May, August and October 1904.

Crataegus ascendens Sarg.

Rhodora, v. 141 (1903).

Thompson Lake, Charles H. Peck (# 76), May and September 1903; also in western Vermont.

Stamens 20

Anthers rose color or purple

Crataegus edsoni Sarg.

Rhodora, vii. 205 (1905).

Lansingburg, Charles H. Peck (# 151), May and September 1903; also from western Vermont to western New Hampshire.

Crataegus mellita n. sp. Sarg.

Crataegus brainerdi Peck (not Sargent), N. Y. State Mus. Bul. 75. 1904. p. 12.

Leaves ovate, acuminate, rounded or occasionally cuneate at the glandular base, finely doubly serrate above, with slender glandular teeth, occasionally divided into four or five pairs of narrow acuminate lobes, about half grown when the flowers open the middle of May and then membranaceous, dark yellow green, villose pubescent along the midribs and slightly roughened by short white hairs above and pale and glabrous below, at maturity thin, dark bluish green and scabrate on the upper and pale blue green on the lower surface, 4.5-6 cm long and 3-5 cm wide, with slender yellow midribs, and thin primary veins extending obliquely to the points of the lobes; petioles slender, slightly wing-margined at the apex, grooved on the upper side, glabrous, glandular toward the apex, 2-4 cm in length. Flowers fragrant, about 1.5 cm in diameter, on short slender glabrous pedicels, in compact 6 to 12-flowered corymbs; calyx tube narrowly obconic, glabrous, the lobes usually entire or sparingly glandular serrate near the middle, often tinged with red, reflexed after anthesis; stamens 20; filaments elongated, becoming red or pink, persistent and conspicuous on the fruit; anthers light red; styles three or four, usually three, surrounded at the base by a few pale hairs. Fruit ripening late in September, on short erect reddish pedicels, in few-fruited clusters, oblong to oblong-obovate, full and rounded at the apex, gradually narrowed at the base, bright scarlet, lustrous, 1.2-1.4 cm long and 8-9 mm wide; calyx prominent, with a short tube, a narrow deep cavity, and reflexed lobes bright red on the upper side below the middle and persistent on the ripe fruit; flesh thin, yellow and edible; nutlets usually three, gradually narrowed and rounded at the ends, ridged on the back, with a low narrow ridge, about 7 mm long and 4 mm wide.

A shrub 2-3 m high, with ascending or suberect stems, and slender nearly straight branchlets marked by numerous small dark lenticels, dark orange colored tinged with red when they first appear, becoming light chestnut-brown, lustrous and pale gray brown in their second season, and armed with light chestnut-brown shining spines 3-3.5 cm long.

Rocky pastures. Rare. Sand Lake, Charles H. Peck (#23 sl, type), May and September 1903, June 1905.

The fragrant flowers are visited by large numbers of honeybees.

MOLLES

Stamens 10

Anthers pale yellow

Crataegus champlainensis Sarg.

Rhodora iii. 20 (1901); Silva N. Am. xiii. 105, t. 667; Man. 438, f. 356.

North Albany, Menands, North Greenbush, Charles H. Peck (# 2 gg), May and September 1904, 1905.

Crataegus contortifolia n. sp. Sarg.

Leaves ovate, acute, rounded, truncate or occasionally abruptly cuneate at the broad entire or glandular base, sharply doubly serrate above, with straight gland-tipped teeth, and slightly divided into four or five narrow acuminate lateral lobes, about half grown when the flowers open early in May and then membranaceous, light yellow green and roughened above by short white hairs, and villose below, specially along the midribs and veins, with long soft hairs mostly persistent during the season, at maturity thick and firm to subcoriaceous, with margins usually more or less contorted or twisted, yellow green, lustrous and scabrate on the upper and dull and pale on the lower surface, 7-8 cm long and nearly as wide, with stout rose-colored midribs, and thin primary veins arching obliquely to the points of the lobes; petioles slender, slightly wing-margined at the apex, thickly covered when they appear with hoary tomentum, becoming villose or pubescent, glandular while young, 3-3.5 cm in length; stipules linear, elongated, acuminate, glandular, fading rose color, caducous; leaves on vigorous shoots more coarsely serrate and more deeply lobed, thicker, often 9-10 cm long, with more prominent midribs and veins, and stout petioles bright rose color and conspicuously glandular above the middle, with dark stipitate persistent glands. Flowers 1.8-2 cm in diameter, on short, stout, hoary tomentose pedicels, in compact, usually 9 to 12-flowered, hoary-tomentose corymbs, with lanceolate acuminate glandular bracts and bractlets fading rose color; calyx tube narrowly obconic, coated with thick hoary tomentum, the lobes slender, acuminate, glandular serrate, villose pubescent, reflexed after anthesis; stamens 10; anthers pale yellow; styles four or five, surrounded at the base by a narrow ring of white hairs. Fruit ripening from the middle to the end of August and soon falling, on stout pedicels covered with matted pale hairs, in compact many-fruited drooping clusters, subglobose to short oblong, bright cherry-red, lustrous, marked by occasional large dark dots, covered with soft whitish hairs most abundant at the ends, about 1.5 cm in

diameter; calyx little enlarged, hoary tomentose, with a broad shallow cavity, and spreading and appressed glandular serrate lobes dark red on the upper side below the middle; flesh thick, yellow, dry and mealy; nutlets four or five, usually four, full and rounded at the base, gradually narrowed and acute at the apex, rounded and slightly ridged on the back, 8-9 mm long and about 6 mm wide.

A shrub sometimes 6-7 m high, but usually much smaller, with diverging stems 12-15 cm in diameter, covered with dark brown scaly bark, stout spreading gray branches forming a roundtopped compact head, and thick zigzag branchlets marked by oblong dark lenticels, thickly covered with hoary tomentum when they first appear, light chestnut-brown, lustrous and sparingly villose during their first season, dull gray or grayish brown, duller and glabrous in their second year, and ultimately ashy gray, and armed with numerous stout or slender nearly straight purplish spines 4-7 cm long.

Hills; North Albany, Charles H. Peck (#53, type), May, June and September 1902; Peck and Sargent, October 1902, August 1905. Near the tollgate, Troy road, Charles H. Peck (#2), May and October 1904; Peck and Sargent, August 1905. Bottoms of the Hudson river, North Greenbush, Peck and Sargent, August 1905.

Anthers pink or rose color

Crataegus exclusa Sarg.

Rhodora, v. 108 (1903).

North Albany, West Albany, Menands, Albia, Greenbush, Charles H. Peck (#51), May and September 1902.

Crataegus oblongifolia n. sp. Sarg.

Leaves oblong-ovate, acute or acuminate, gradually narrowed and cuneate or rounded at the entire or glandular base, coarsely doubly serrate above, with straight glandular teeth, and slightly divided into four or five pairs of small acuminate spreading lobes, more than half grown when the flowers open about the 20th of May and then thin, light yellow green, and covered above by short white hairs and villose below along the midribs and veins, at maturity thick and firm in texture, yellow green, glabrous on the upper, sparingly villose on the lower surface, reticulate-venulose, 5-7 cm long and 4-5 cm wide, with stout deep rose-colored midribs, and prominent primary veins extending obliquely to the points of the lobes; petioles stout, wing-margined at the apex, deeply grooved, covered with matted pale hairs more or less persistent during the

season, sparingly glandular near the apex, deep rose color in the autumn, 1.5-2 cm long; stipules linear, acuminate, glandular, caducous; leaves on vigorous shoots rounded at the base, coarsely serrate, more deeply lobed, coriaceous, 7-8 cm long and 5-6 cm wide, with prominent midribs and veins. Flowers 1.8-2 cm in diameter, on short pedicels thickly clothed with long white hairs, in compact many-flowered hairy corymbs, with linear glandular bracts and bractlets fading rose color; calyx tube narrowly obconic, covered with long matted white hairs, the lobes slender, acuminate, glandular, villose pubescent, reflexed after anthesis; stamens 10; anthers rose color; styles three or four, surrounded at the base by a narrow ring of white hairs. Fruit ripening early in September, on short hairy pedicels, in 6 to 10-fruited erect or spreading clusters, pyriform till nearly grown, subglobose to short-oblong when ripe, dark crimson, lustrous, marked by numerous large pale dots, 1.2-1.5 cm in diameter; calyx little enlarged, with a broad deep cavity, and usually erect or incurved villose lobes mostly persistent on the ripe fruit; flesh thick, yellow, rather juicy; nutlets usually 3, gradually narrowed and rounded at the ends, slightly ridged on the back, with a low narrow ridge, about 7 mm long and 4 mm wide.

A round headed shrub 3-4 m high, with numerous stout stems covered below with dark brown scaly bark and light olive-green above, and slender slightly zigzag branchlets marked by many small oblong pale lenticels, thickly coated when they first appear with matted pale hairs, light chestnut-brown and very lustrous during the first season and darker colored the following year, and armed with numerous stout nearly straight purplish shining spines 2.5-3.5 cm long.

Low moist ground; Menands, near the Erie canal, Charles H. Peck (#51 mc, type), May and September 1904, and on the Golf grounds, Peck and Sargent (#53), August 1905.

Crataegus spissiflora Sarg.

Proc. Rochester Acad. Sci. iv. 112 (1903).

Menands, Charles H. Peck (#77), May and September 1904; also at Rochester N. Y., and in Ontario.

FLABELLATAE

Stamens 5 to 7

Anthers rose color.

Crataegus holmesiana Ashe

Jour. Elisha Mitchell Sci. Soc. xvi. pt ii, 78 (1900).—Sargent, Silva N. Am. xiii. 119, t. 676; Man. 449, f. 366.

North Albany, West Albany, Menands, North Greenbush, Albia and Thompson Lake, Charles H. Peck (#2, 12), May and September 1902; also eastern Massachusetts to Canada, western New York and eastern Pennsylvania.

Crataegus sejuncta n. sp. Sarg.

Leaves ovate, acuminate, rounded or cuneate at the base, sharply and often doubly serrate above, with straight glandular teeth, and divided into four or five pairs of small acuminate spreading lobes, when they unfold deeply tinged with red and coated above with long white hairs, about half grown when the flowers open the middle of May and then thin, yellowish green, scabrate and slightly hairy above along the midribs and pale and sparingly villose along the midribs and veins below, at maturity thin, yellow green and rough on the upper, pale and nearly glabrous on the lower surface, 6-7 cm long, 5-6 cm wide, with stout orange colored midribs, and slender primary veins extending obliquely to the points of the lobes; petioles slender, nearly terete, glandular toward the apex, slightly villose through the season, often tinged with rose color, 2-2.5 cm in length; leaves on vigorous shoots broadly ovate, long pointed, truncate or slightly cordate at the base, coarsely serrate and more deeply lobed. Flowers about 1.5 cm in diameter, on short stout villose-pubescent pedicels, in very compact, hairy, usually 8 to 10-flowered corymbs, with oblong to linear acute glandular bracts and bractlets fading brown and mostly deciduous before the flowers open; calyx tube narrowly obconic, glabrous, the lobes slender, gradually narrowed, long-pointed and acuminate, glandular serrate, glabrous on the outer, villose on the inner surface, reflexed after anthesis; stamens 7 to 10; anthers rose color; styles three or four. Fruit ripening about the middle of September, on short stout slightly hairy pedicels, in few-fruited clusters, subglobose to oval, crimson, lustrous, marked by numerous pale dots, 1.3-1.5 cm in diameter; calyx little enlarged, with a wide shallow cavity, and slender spreading closely appressed glandular serrate lobes slightly hairy on the upper side and mostly persistent on the ripe fruit; flesh thin, yellow, dry and mealy; nutlets three or four, narrowed and rounded at the ends, irregularly ridged on the back, with a broad low grooved ridge, 6-7 mm long and 4-5 mm wide.

A shrub or small tree 4-5 m high, with slender nearly straight branchlets marked by small pale lenticels, dark orange-green and glabrous when they first appear, becoming bright chestnut-brown

and lustrous, and dull gray brown in their second year, and armed with stout nearly straight light chestnut-brown shining spines 2.5-3.5 cm long.

West Albany, Charles H. Peck (#22, type); Thompson Lake, Charles H. Peck (#77 tl), May and September 1904.

To this species probably belongs a common plant of western Massachusetts and western Vermont that has sometimes been referred to C. polita Sarg., a species with long slender glabrous pedicels and much smaller fruit.

Williamstown, Massachusetts, W. W. Eggleston (#2312); Bennington, Vermont (#2300, 2726); Cornwall, Vermont, Ezra Brainerd (#20).

Crataegus acclivis Sarg.

Proc. Rochester Acad. Sci. iv. 115 (1903).

Menands, Charles H. Peck (#53 bn), May, June and August 1904; North Albany, Charles H. Peck (#51 nan), May and June 1905; also near Rochester, New York, and in southern Ontario.

Crataegus polita Sarg.

Rhodora, v. 112 (1903).

Sand Lake, Charles H. Peck (#22), June and August 1902; also western Massachusetts to southern Connecticut.

Crataegus lobulata Sarg.

Rhodora, iii. 22 (1901); Silva N. Am. xiii. 117, t. 675; Man. 447, f. 364.

Menands, Golf ground, Peck and Sargent (#22 gg), August 17, 1905; also western New England.

DILATATAE

Stamens 20

Anthers rose color

Crataegus dilatata Sarg.

Bot. Gazette, xxxi. 9 (1901); Silva N. Am. xiii. 113, t. 672; Man. 455, f. 371.

Thompson Lake, Charles H. Peck (#75), May, June and September 1903, July 1905; also in Gansevoort, Saratoga co. and from eastern Massachusetts to Canada.

Crataegus hudsonica Sarg.

Man. 457, f. 373 (1905).

Hills; West Albany and Menands, Charles H. Peck (#188, type), May, September and October 1904; Greenbush, October 1905.

Crataegus durobrivensis Sarg.

Trees and Shrubs, i. 3, t. 2 (1902).

North Albany, West Albany, Charles H. Peck (#193); also western New York and Ontario.

ANOMALAE

Stamens 5-15

Anthers rose color

Crataegus asperifolia Sarg.

Rhodora, iii. 31 (1901).

Menands, Boulevard pasture, Charles H. Peck (# 58 bp), May and October 1903; also in western New England.

COCCINEAE

Stamens 5-10

Anthers pale yellow

Crataegus coccinea Linnaeus

Spec. 476 (1753).—Sargent, Silva N. Am. xiii. 133, t. 683; Man. 459, f. 375.

North Albany, Charles H. Peck (#15), May and September 1904; also eastern New England and western Vermont to the St Louis valley.

Crataegus coccinea var. rotundifolia Sarg.

Bot. Gazette, xxxi. 14 (1901); Silva N. Am. xiii. 134; Man. 460.

Albia and Watervliet, Charles H. Peck (# 4), August 1905.

Crataegus dodgei Ashe

Jour. Elisha Mitchell Sci. Soc. xix. 26 (March 1903).—Sargent, Proc. Phil. Acad. Sci 632 (1905).

Crataegus gravesii Sarg., Rhodora, v. 160 (June 1903).

North Albany, West Albany, Menands and Wynantskill, Charles H. Peck (# 18), May, September and October 1903; also western and southern New England to Michigan and eastern Pennsylvania.

Crataegus caesariata n. sp. Sarg.

Leaves obovate to oval, short-pointed or acuminate at the apex, concave cuneate at the entire base, finely doubly serrate above, with incurved glandular teeth, and divided above the middle into three or four pairs of small acuminate spreading lobes, nearly half grown when the flowers open about the middle of May and then membranaceous, light yellow green, smooth and slightly hairy along the midribs above and pale and glabrous below, at maturity thin, glabrous, yellow green, 3.5-4.5 cm long and 2-3.5 cm wide, with thin slender midribs, and slender veins arching obliquely to the points of the lobes; petioles slender, wing-margined at the apex, sparingly

hairy while young, becoming glabrous, tinged with rose color in the autumn, 1.5-2 cm in length; leaves on vigorous shoots nearly orbicular, coarsely serrate, and more deeply lobed, with broad acuminate lobes, subcoriaceous, 5-6 cm in diameter, with thick midribs and stout rose-colored petioles conspicuously glandular through the season. Flowers on long slender villose pedicels, in usually 10 to 12-flowered hairy corymbs, the lower peduncles from the axils of upper leaves; calyx tube narrowly obconic, slightly hairy, the lobes slender, elongated, acuminate, minutely glandular serrate above the middle, glabrous on the outer, sparingly villose on the inner surface, reflexed after anthesis; stamens 10; anthers pale yellow; styles two or three. Fruit ripening from the middle of September to the first of October, on long villose pedicels, in drooping usually five or six-fruited clusters, oval or slightly obovate, with a deep depression at the insertion of the stalk, dark crimson, lustrous, marked by numerous small dark dots, hairy specially at the ends, 1.2-1.5 cm long and 7-12 mm wide; calyx little enlarged, with a broad shallow cavity, and closely appressed lobes often persistent on the ripe fruit; flesh thick, firm, deeply tinged with red; nutlets usually three, gradually narrowed and rounded at the ends, rounded and only slightly ridged on the back, with a low broad ridge, 6-7 mm long and about 4 mm wide.

A shrub 2-3 m high, with intricately branched ascending stems covered below with dark scaly bark, and slender slightly zigzag branchlets marked by numerous oblong pale lenticels, dark orange-green and villose-pubescent when they first appear, soon becoming glabrous, dark orange-brown during their first season and lighter the following year, and armed with few spines or sometimes unarmed.

Roadsides, North Albany and Wynantskill. Not common. Charles H. Peck (#18 E, type), May, September and October.

Crataegus illuminata n. sp. Sarg.

Leaves rhombic to oblong obovate, acuminate, gradually narrowed and concave cuneate at the entire base, finely, often doubly serrate above, with glandular incurved teeth, and slightly divided above the middle into numerous short wide lobes, at maturity thin, glabrous, yellow green and very lustrous on the upper and pale on the lower surface, 4-6 cm long and 3.5-4 cm wide, with slender yellow midribs, and thin primary veins arching obliquely to the points of the lobes; petioles slender, narrowly wing-margined at the apex, grooved on the upper side, glabrous, 2-2.5 cm in length; leaves on vigorous shoots ovate, acuminate, concave cuneate at the base,

thin, coarsely serrate, deeply lobed, with narrow acuminate lobes, often 8-10 cm long and 6-8 cm wide, with short broadly winged petioles and foliaceous lunate serrate stipules. Flowers not seen. Fruit ripening late in August and early in September, on slender sparingly hairy pedicels, in few-fruited erect or spreading clusters, oval to subglobose, bright cherry-red, lustrous, slightly hairy at the ends, 8-10 mm long and 7-8 mm wide; calyx prominent, with a broad deep cavity, and small acuminate reflexed and closely appressed nearly entire lobes slightly villose on the upper side and persistent on the ripe fruit; flesh thin, greenish yellow, dry and mealy; nutlets three or four, acute at the ends, ridged on the back, with a high narrow often grooved ridge, 6-7 mm long and 4-5 mm wide.

A round topped compact shrub 2-3 m tall, with numerous slender erect stems covered below with dark brown scaly bark and pale above, and slender slightly zigzag light orange-brown branchlets, armed with many slender straight or slightly curved bright chestnut-brown shining spines 3-4 cm long.

Dense thickets on rich bottom lands close to the banks of the Hudson river, North Greenbush, Peck and Sargent (# 72 ng, type), August 17, 1905; North Albany, Charles H. Peck, September 1905.

Stamens 10-18

Crataegus divergens n. sp. Sarg.

Crataegus irrasa var. divergens Peck, N. Y. State Mus. Bul. 75. p. 51. 1904.

Leaves oblong obovate to rhombic, acuminate, gradually narrowed and concave cuneate at the entire glandular base, finely crenately serrate above, with gland-tipped teeth, and divided above the middle into four or five pairs of slender acuminate lobes pointing toward the apex of the leaf, nearly fully grown when the flowers open about the 10th of May and then thin, yellow green, lustrous and sparingly hairy above, pale and slightly villose along the midribs and veins below, with short hairs persistent through the season, at maturity thin but firm in texture, dark yellow green, glabrous and very lustrous on the upper and pale on the lower surface, 4-6 cm long and 3.5-4 cm wide, with slender yel ow m drib , and thin veins arching obliquely to the points f the lobes; petioles slender, wing-margined at the apex, grooved on the upper side, villose-pubescent when they first appear, becoming glabrous, glandular toward the

apex, with minute caducous glands, 2.5-3 cm in length; stipules linear-falcate, glandular, fading brown, caducous; leaves on vigorous shoots broadly ovate to rhombic, acuminate, gradually or abruptly cuneate at the base, coarsely serrate, more deeply divided into broad acuminate spreading lobes and often 7-9 cm long and 6-8 cm wide. Flowers 1.3-1.5 cm in diameter, on short stout pedicels coated with long matted white hairs, in very compact 5 to 10-flowered hairy corymbs; calyx tube narrowly obconic, covered at the base with long white hairs and nearly glabrous above, the lobes short, acuminate, laciniately glandular serrate, glabrous on the outer, densely villose on the inner surface, reflexed after anthesis; stamens 10-18; anthers pale yellow; styles usually three. Fruit ripening late in August or early in September, persistent for several weeks, on short slightly hairy pedicels, in usually five to seven-fruited drooping clusters, short oblong to subglobose, scarlet, lustrous, marked by large pale dots, about 1 cm in diameter; calyx little enlarged, with a narrow deep cavity, and spreading and appressed lobes mostly deciduous from the ripe fruit; flesh thin, greenish yellow, dry and mealy; nutlets usually three, full and rounded at the ends, ridged on the back, with a broad low slightly grooved ridge, light colored, 7-8 mm long and 4-5 mm wide.

A shrub 3-4 m high, with numerous small ascending stems, and thin slightly zigzag branchlets thickly coated when they first appear with matted pale hairs, becoming light orange-brown and nearly glabrous during their first season and dark reddish brown the following year, and armed with slender straight purplish spines 2.5-3.5 cm long.

Borders of woods in clayey soil at the margin of the bottoms of the Hudson river; North Greenbush, Charles H. Peck (# 70, type), May, July and October 1903; Peck and Sargent, August 1905.

INTRICATAE

Stamens 10

Anthers pale yellow

Crataegus intricata Lange

Bot. Tidskr. xix. 246 (1894).

North Albany, Menands and Lansingburg, Charles H. Peck (# 112na), May and June 1903; also southern and western New England.

Crataegus foetida Ashe

Ann. Carnegie Mus. i. pt. iii. 389 (1902).

Crataegus baxteri Sarg., Proc. Rochester Acad. Sci. iv. 107. (1903).

North Albany, Charles H. Peck (# 50), May and October 1903; Lansingburg, Charles H. Peck, 1904; also western Massachusetts to western New York and eastern Pennsylvania.

Crataegus modesta Sarg.

Rhodora, iii. 28 (1901); Proc. Phil. Acad. 635 (1905).

Crataegus premora Ashe, Ann. Carnegie Mus. i. pt. iii. 391, (1902).

North Albany, West Albany, Greenbush, Menands and Lansingburg. Charles H. Peck (# 111), May and October 1902; also western and southern New England to eastern Pennsylvania.

Crataegus verecunda Sarg.

Proc. Rochester Acad. Sci. iv. 109 (1903).

Lansingburg, Charles H. Peck, June and September 1904; also at Rochester, New York.

Anthers pink

Crataegus peckii Sarg.

Rhodora, v. 63 (1903).

Hills; Lansingburg, Charles H. Peck (# 11), May and October 1902.

TOMENTOSAE

Mature leaves thin

Stamens usually 20

Anthers dark rose color or red

Crataegus tomentosa Linnaeus

Spec. 476 (1753)—Sargent, Silva N. Am. iv. 101, t. 183; Man. 492, f. 406.

Watervliet, H. G. Jesup, June 18, 1869 (not seen in recent years); also westward to Michigan and Missouri, and south to eastern Pennsylvania and along the Appalachian mountains.

Crataegus menandiana n. sp. Sarg.

Leaves elliptic to rhombic or rarely obovate, acute or short-pointed at the apex, gradually narrowed and concave cuneate at the entire base, finely doubly serrate above, with straight glandular teeth, and slightly divided above the middle into five to seven small

acuminate spreading lobes, nearly half grown when the flowers open at the end of May and then thin, yellow green, slightly roughened and villose-pubescent above along the midribs, pale and furnished below with small tufts of axillary hairs, at maturity thin, but firm in texture, glabrous, dull yellow green and very smooth on the upper, paler on the lower surface, 6-9 cm long and 4-6 cm wide, with stout yellow midribs, and slender primary veins deeply impressed on the upper side, petioles stout, broadly wing-margined nearly to the middle, grooved on the upper side, slightly villose while young, soon glabrous, sparingly glandular, with persistent glands, often rose-colored in the autumn, 1.5-2 cm in length. Flowers 1.5-1.7 cm in diameter, on long stout slightly villose pedicels, in usually 10 to 12-flowered wide lax corymbs, the lowest peduncle from the axil of an upper leaf; calyx tube narrowly obconic, glabrous or slightly hairy about the base, the lobes slender, acuminate, glandular on the margins, with minute stipitate glands, glabrous on the outer, villose on the inner surface; stamens 20; filaments elongated; anthers red; styles two to four, surrounded at the base by a few scattered white hairs. Fruit ripening early in October, on short stout slightly hairy reddish pedicels, in broad long-branched few-fruited drooping clusters, subglobose, scarlet, lustrous, marked by large pale dots, about 1.2 cm in diameter; calyx little enlarged, with a broad shallow cavity, and spreading or incurved coarsely serrate lobes mostly persistent on the ripe fruit; flesh yellow, soft and succulent; nutlets two or three, broad and rounded at the base, slightly narrowed and rounded at the apex, rounded and only slightly ridged on the back, penetrated on the inner faces by small shallow irregular cavities about 7 mm long, 4–5 mm wide.

A shrub 6-7 m high, with numerous ascending stems covered with dark scaly bark and spreading into large thickets, and slender nearly straight branchlets marked by small oblong pale lenticels, dark orange-green and puberulent when they first appear, becoming bright chestnut-brown, lustrous and bright red brown in their second year, and armed with very numerous slender nearly straight purplish shining spines 4.5-6 cm long.

Menands, Golf ground, Charles H. Peck (# 1 gg, type), May and October 1904; July and September 1905.

Anthers pale yellow

Crataegus ambrosia n. sp. Sarg.

Leaves ovate to elliptic or subrhomboidal, short-pointed or acuminate at the apex, rounded or abruptly and gradually concave

cuneate at the entire base, sharply doubly serrate above, with straight glandular teeth, and very slightly divided above the middle into four or five pairs of small acuminate spreading lobes, nearly half grown when the flowers open during the last week of May and then membranaceous, light yellow, very smooth and sparingly villose-pubescent along the midribs above, pale and glabrous below with the exception of occasional short axillary hairs, at maturity thin, glabrous, yellow green, darker on the upper than on the lower surface, 7-9 cm long and 5-6 cm wide, with the slender yellow midribs and thin primary veins extending obliquely to the points of the lobes; petioles slender, wing-margined at the apex, slightly grooved, glabrous, occasionally glandular above the middle, tinged with rose color, 2-3.5 cm in length. Flowers on stout elongated villose pedicels, the lowest peduncles from the axils of the upper leaves, in wide 6 to 12-flowered corymbs, with linear acute glandular rose-colored caducous bracts and bractlets; calyx tube narrowly obconic, sparingly villose at the base, the lobes foliaceous, acuminate, red and glandular at the apex, laciniately toothed, glabrous on the outer and villose on the inner surface, reflexed after anthesis; stamens 20; anthers pale yellow; styles two or three. Fruit ripening late in September or early in October, on long slender drooping pedicels, in usually five or six-fruited clusters, short oblong, full and rounded at the ends, crimson, lustrous, marked by small dark dots, 1-1.4 cm long and 8-12 mm wide; calyx prominent, with a deep narrow cavity, and spreading erect or incurved coarsely serrate lobes, dark red at the base, conspicuously villose on the upper surface and mostly persistent on the ripe fruit; flesh thick, slightly tinged with red, dry and mealy; nutlets usually three, gradually narrowed and rounded at the base, narrowed and rounded or acute at the apex, ridged on the back, with a broad slightly grooved ridge, penetrated on the inner faces by wide shallow grooves, 7-8 mm long and about 5 mm wide.

A shrub 3-4 m high, with erect stems covered with dark brown scaly bark and forming broad thickets, wide-spreading flexuose branches, and slender nearly straight branchlets marked by oblong pale lenticels, dark orange-green when they first appear, becoming chestnut-brown and very lustrous and dull red brown in their second season, and armed with numerous slender nearly straight purplish shining spines 3-5 cm long.

Menands, Golf ground, Charles H. Peck (# 3 tgn, type), May and October 1904, July and September 1905.

Stamens 10 or less

Anthers rose color

Crataegus rhombifolia Sarg.

Rhodora, v. 183 (1903).

Albia, North Albany, West Albany and Thompson Lake, Charles H. Peck (#80), June and September 1903; May and October 1904; also southern Connecticut to western Vermont.

Anthers white

Crataegus flagrans n. sp. Sarg.

Leaves oblong-ovate to oval, acuminate, gradually or abruptly narrowed and concave cuneate at the entire base, coarsely doubly serrate above, with straight glandular teeth, and slightly divided above the middle into five or six pairs of small acuminate lobes, when they unfold deeply tinged with red and coated with soft white hairs, about half grown when the flowers open from the 10th to the middle of May and then membranaceous, yellow green, lustrous and scabrate above, pale and sparingly villose along the midribs and primary veins below, with short hairs sometimes persistent through the season, at maturity thin, dull green and still slightly roughened on the upper and pale on the lower surface, 6-8 cm long and 4-6 cm wide, with slender yellow midribs, and thin primary veins extending obliquely to the points of the lobes; petioles stout, broadly wing-margined to below the middle, grooved on the upper side, villose-pubescent while young, becoming glabrous, 1-1.5 cm in length; stipules linear, acuminate, glandular, fading rose color, caducous. Flowers about 1.2 cm in diameter, on slender densely villose pedicels, in mostly 15 to 20-flowered hairy cormybs, the lower branches from the axils of upper leaves, with lanceolate to linear obovate glandular rose-colored bracts and bractlets; calyx tube narrowly obconic, coated with long matted pale hairs, the lobes slender, red, and acuminate at the apex, glandular serrate, glabrous on the outer, villose on the inner surface, reflexed after anthesis; stamens 10; anthers white; styles usually three. Fruit ripening early in October, on slender hairy reddish pedicels, in many-fruited drooping clusters, subglobose, dark crimson, lustrous, 8-10 mm in diameter; calyx little enlarged, with a deep narrow cavity, and closely serrate reflexed lobes mostly deciduous from the ripe fruit; flesh thin, orange color, soft and suc-

culent; nutlets three, full and rounded at the base, gradually narrowed at the apex, ridged on the back, with a broad low slightly grooved ridge, irregularly penetrated on the inner faces by wide deep cavities, about 7 mm long and 5 mm wide.

A shrub 4-5 m high, with numerous erect and spreading stems, covered with dark brown scaly bark and forming a broad round topped head, and slender slightly zigzag branchlets marked by small oblong dark lenticels, orange-brown and sparingly villose when they first appear, becoming glabrous and dark red brown by midsummer and bright red brown and lustrous the following season, and armed with slender nearly straight chestnut-brown shining spines 3-4 cm long.

Rich bottom lands of the Hudson river; North Greenbush, Charles H. Peck (#68 ng, type), May, June and October 1904; Peck and Sargent, August 17, 1905.

Crataegus flagrans is interesting as the first species of the subgroup of the Tomentosae, with thin leaves glabrous or almost glabrous at maturity, that has been noticed with 10 stamens and white or yellow anthers.

Mature leaves coriaceous to subcoriaceous

Stamens 20

Anthers rose color

Crataegus succulenta Link

Handbk. ii. 78 (1831).—Sargent, Silva N. Am. xiii. 139, t. 101; Man. 497, f. 411.

North Albany, Charles H. Peck (# 12), May and September 1904; Albia, Charles H. Peck (# 1), May and June 1904, June 1905.

Crataegus gemmosa Sarg.

Bot. Gazette, xxxiii. 119 (1902); Silva N. Am. xiii. 141, t. 686; Man. 498, f. 412.

North Albany, near the tollgate, Troy road, Peck and Sargent (# 3 tg) October 1902; Charles H. Peck, May and October 1904; also western New York, Ohio, Ontario and Michigan.

The anthers of the Albany plant as described by Professor Peck are paler than those of the type trees which are at Grand Rapids, Mich. and the fruits, which were the largest and most beautiful I have seen on any plants of this group, were on October 2, 1902,

about 1.5 cm in diameter. In later seasons, however, Professor Peck has found them somewhat smaller, and, except in the color of the anthers and in the size of the fruit and its larger calyx lobes, I can find nothing by which to distinguish the Albany plant from Crataegus gemmosa.

Anthers pale yellow

Crataegus halliana n. sp. Sarg.

Leaves oblong-obovate to oval, acute or acuminate, gradually narrowed and concave cuneate at the slender entire base, finely doubly serrate above, with minute glandular teeth, and very slightly lobed above the middle into small acute lobes, about half grown when the flowers open the 1st of June and then thin, yellow green, scabrate and slightly hairy above along the midribs and pale and sparingly villose, with short persistent hairs below along the midribs and veins, at maturity subcoriaceous, conspicuously reticulate-venulose, dark green, smooth and lustrous on the upper and pale on the lower surface, 5-6 cm long, 3.5-4 cm wide, with thin yellow midribs and veins deeply impressed on the upper side; petioles slender, narrowly wing-margined to below the middle, grooved and villose while young along the upper side, soon glabrous, tinged with red in the autumn, 1.5-2 cm in length; leaves on vigorous shoots sometimes more deeply lobed, 6-7 cm long and 4-5 cm wide, with stout broadly winged petioles and slender falcate acuminate rose-colored caducous stipules. Flowers 1.2-1.3 cm in diameter, on long slender villose pedicels, in broad 8 to 16-flowered crowded corymbs, with long several-flowered peduncles from the axils of the two upper leaves; calyx tube narrowly obconic, villose at the base, glabrous above, the lobes slender, acuminate, laciniately glandular-serrate, glabrous on the outer, villose on the inner surface, reflexed after anthesis; stamens 20; filaments short; anthers pale yellow; styles two or three. Fruit very abundant, ripening early in October, on long drooping reddish pedicels, in wide many-fruited corymbs, subglobose, crimson, lustrous, marked by large dark dots, 1-1.2 cm in diameter; calyx little enlarged, with a deep narrow cavity, and spreading closely appressed glandular-serrate lobes coated on the upper side with matted pale hairs; flesh thick, tinged with red, soft and very succulent; nutlets two or three, gradually narrowed and rounded at the ends, ridged on the back, with a broad grooved ridge, penetrated on the inner faces by large deep cavities, about 7 mm long and 4 mm wide.

A shrub 2-5 m high, with numerous widespreading or ascending stems covered with dark brown scaly bark, and slender nearly straight branchlets marked by small oblong pale lenticels, light orange-green and glabrous when they first appear, light chestnut-brown and very lustrous at the end of their first season, darker the following year, and armed with few slender more or less curved bright chestnut-brown shining spines 2.5-5 cm long and often pointing toward the base of the branch.

North Albany, Charles H. Peck (# 3 na, type), June and October 1904, June 1905. Menands, Golf ground (# 3 gg, with leaves sometimes narrow-rhomboidal), May, June and September 1905.

This species is named in memory of James Hall (1811–1898), the distinguished geologist and paleontologist, long a professor in the Rensselaer Polytechnic Institute of Troy and one of the authors of the *Catalogue of Plants in the vicinity of Troy*, published in 1837.

Stamens 10-20

Anthers pink

Crataegus conspicua n. sp. Sarg.

Leaves oblong-obovate, rounded, acute or acuminate at the apex, gradually narrowed to the concave cuneate entire base, coarsely doubly serrate above, with straight glandular teeth, and slightly divided toward the apex into three or four pairs of short acute lobes, nearly one third grown when the flowers open about the 20th of May and then membranaceous, dark yellow green and glabrous above with the exception of a few short pale hairs along the midribs and veins, and covered below with pale tomentum most developed on the midribs and veins, at maturity coriaceous, dark green and glabrous on the upper and pale and tomentose on the lower surface, 7-9 cm long and 5-7 cm wide, with stout midribs deeply impressed on the upper side of the leaf and rose-colored below toward the base, and slender primary veins extending obliquely to the points of the lobes; petioles stout, wing-margined to below the middle, deeply grooved, slightly villose along the upper side while young, becoming glabrous and often rose-colored or purple below the middle, 2-3 cm in length; leaves on vigorous shoots oval to obovate, more coarsely serrate, 7-8 cm long and 5-6 cm wide. Flowers 1.2-1.3 cm in diameter, on slender densely hoary tomentose pedicels, in broad many-flowered tomentose corymbs,

with large acuminate glandular rose-colored conspicuous bracts and bractlets deciduous before the flowers open; calyx tube narrowly obconic, coated with long matted pale hairs, the lobes long, slender, acuminate, coarsely glandular serrate usually only above the middle, puberulent on the outer and covered with matted hairs on the inner surface; stamens 10-20; anthers small, light pink; styles two to four. Fruit ripening the first of October, on slender drooping pedicels, in few-fruited clusters, subglobose to short oblong, full and rounded at the ends, crimson, lustrous, 8-10 mm in diameter; calyx conspicuous, with a narrow deep cavity and foliaceous spreading or reflexed coarsely glandular serrate lobes; flesh thick, orange color, sweet and succulent; nutlets two to four, full and rounded at the ends, ridged on the back, with a high narrow often irregular slightly grooved ridge, deeply penetrated on the inner faces by broad deep cavities, about 7 mm long and 4 mm wide.

A broad shrub 3-4 m high, with numerous erect stems and stout branchlets, light orange-green and glabrous when they first appear, bright chestnut-brown and very lustrous during their first winter, and dull dark reddish brown the following year, and armed with many stout nearly straight purplish shining spines 3-3.5 cm in length.

Near the tollgate on the Troy road, North Albany, Peck and Sargent (# 1, type), October 2, 1902; Charles H. Peck, May and October 1903; also near pulp mill station, New Haven, Addison co. Vt. Brainerd and Sargent (# 15 A), September 1900; Ezra Brainerd, October 1900 and May and September 1901.

In the Vermont plant the calyx lobes, specially before anthesis, are rather longer, the flowers are somewhat larger, and the leaves are broader in proportion to their length than those of the Albany plant, but the two appear to belong to one species peculiar in the tomentose covering of the entire lower surface of the leaves.

Stamens 10 or less

Anthers rose color

Crataegus beckiana n. sp. Sarg.

Leaves broadly ovate to obovate, acute and often short-pointed at the apex, concave cuneate at the entire base, finely doubly serrate above, with straight gland-tipped teeth, and slightly divided above the middle into four or five pairs of short acuminate lobes, about

half grown when the flowers open during the last week of May and then membranaceous, light yellow green, smooth and glabrous on the upper surface with the exception of a few short hairs along the midribs and pale and glabrous on the lower surface, at maturity subcoriaceous, dark green and very smooth above, pale below, conspicuously reticulate-venulose, 6-7 cm long and 5-6 cm wide, with slender midribs and primary veins deeply impressed on the upper side of the leaf; petioles stout, wing-margined at the apex, deeply grooved, villose on the upper side while young, becoming glabrous, 1.5-2 cm in length. Flowers 1.2-1.4 cm in diameter, on slender slightly villose pedicels, in wide many-flowered corymbs; calyx tube narrowly obconic, glabrous, the lobes slender, acuminate, glandular-serrate below the middle, glabrous on the outer, villose on the inner surface, reflexed after anthesis; stamens 10; anthers dark rose color; styles two or three. Fruit ripening early in September, in many-fruited drooping clusters, subglobose to obovate, full and rounded at the ends, crimson, lustrous, marked by numerous small pale dots; calyx enlarged and prominent, with a deep narrow cavity and foliaceous coarsely serrate reflexed and appressed lobes, dark red and villose on the upper side and mostly persistent on the ripe fruit; flesh thin, dry and yellow; nutlets usually two, rounded and obtuse at the ends, irregularly ridged on the broad back, deeply penetrated on the inner face by broad irregular cavities, 6-7 mm long and about 5 mm wide.

A tree or treelike shrub 6-7 m high, with a trunk sometimes 15-18 cm in diameter covered with dark gray scaly bark, large spreading and ascending ashy gray branches forming a round-topped symmetrical head, and stout branchlets marked by oblong pale lenticels, light orange-green and glabrous when they first appear, becoming bright chestnut-brown and very lustrous during their first winter and ultimately dull gray brown, and armed with numerous stout nearly straight purplish shining spines 2.5-4 cm long.

Rich bottom lands of the Hudson river; North Greenbush, Charles H. Peck (# 60, type), May and September 1903.

This species is named in honor of Louis C. Beck (1798-1853), a native of Schenectady, Professor of chemistry in the Medical College at Albany, and author of the *Botany of the Northern and Middle States*, published in 1833, and of numerous papers on botany and chemistry.

Anthers white

Crataegus ferentaria Sarg.

Proc. Rochester Acad. Sci. iv. 135 (1903).

North Albany, Albia, Charles H. Peck (# 19 n), May and August 1904; also southern New England, western New York and Ontario.

Crataegus hystricina Ashe

Bot. Gazette, xxxv. 433 (1903).

Thompson Lake, Charles H. Peck (# 81), June and September 1904; also at Stratford, Connecticut.

EXPLANATION OF PLATES

PLATE 8

Marasmius longistriatus Pk.

LONG STRIATED MARASMIUS

1, 2 Two moist plants, the larger showing gills beneath the pileus
3, 4 Three plants with dry caps, showing the long striations

Clitopilus squamulosus Pk.

SQUAMULOSE CLITOPILUS

5 Mature plant
6 Vertical section of the upper part of a mature plant
7 Transverse section of a stem
8 Four spores, x 400

Entoloma flavifolium Pk.

YELLOW GILLED ENTOLOMA

9 Young plant showing pale yellow gills
10 Immature plant after the gills have begun to change color
11 Mature plant
12 Vertical section of the upper part of a young plant
13 Vertical section of the upper part of a mature plant
14 Transverse section of a stem
15 Four spores, x 400

FUNGI

FIG. 1-4
MARASMIUS LONGISTRIATUS PK.
LONG STRIATED MARASMIUS

FIG. 5-8
CLITOPILUS SQUAMULOSUS PK.
SQUAMULOSE CLITOPILUS

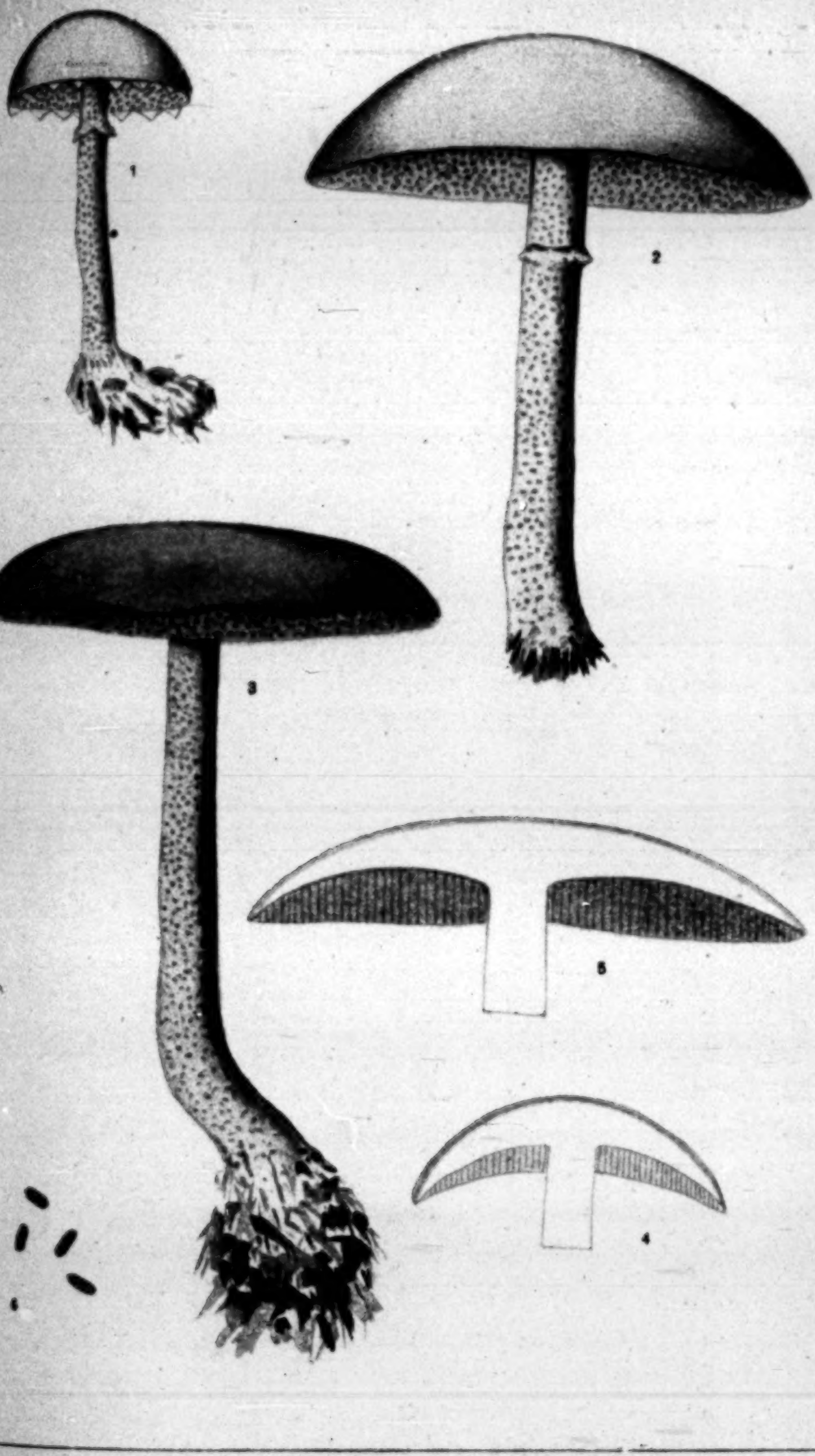
FIG. 9-15 ENTOLOMA FLAVIFOLIUM PK.
YELLOW GILLED ENTOLOMA

PLATE T

Boletus acidus Pk.

Acid Boletus

1 Young plant showing the appendiculate margin of the cap
2 Immature plant showing a collar on the stem
3 Mature plant
4 Vertical section of the upper part of a young plant
5 Vertical section of the upper part of a mature plant
6 Four spores, x 400



BOLETUS ACIDUS Pk.
ACID BOLETUS

A

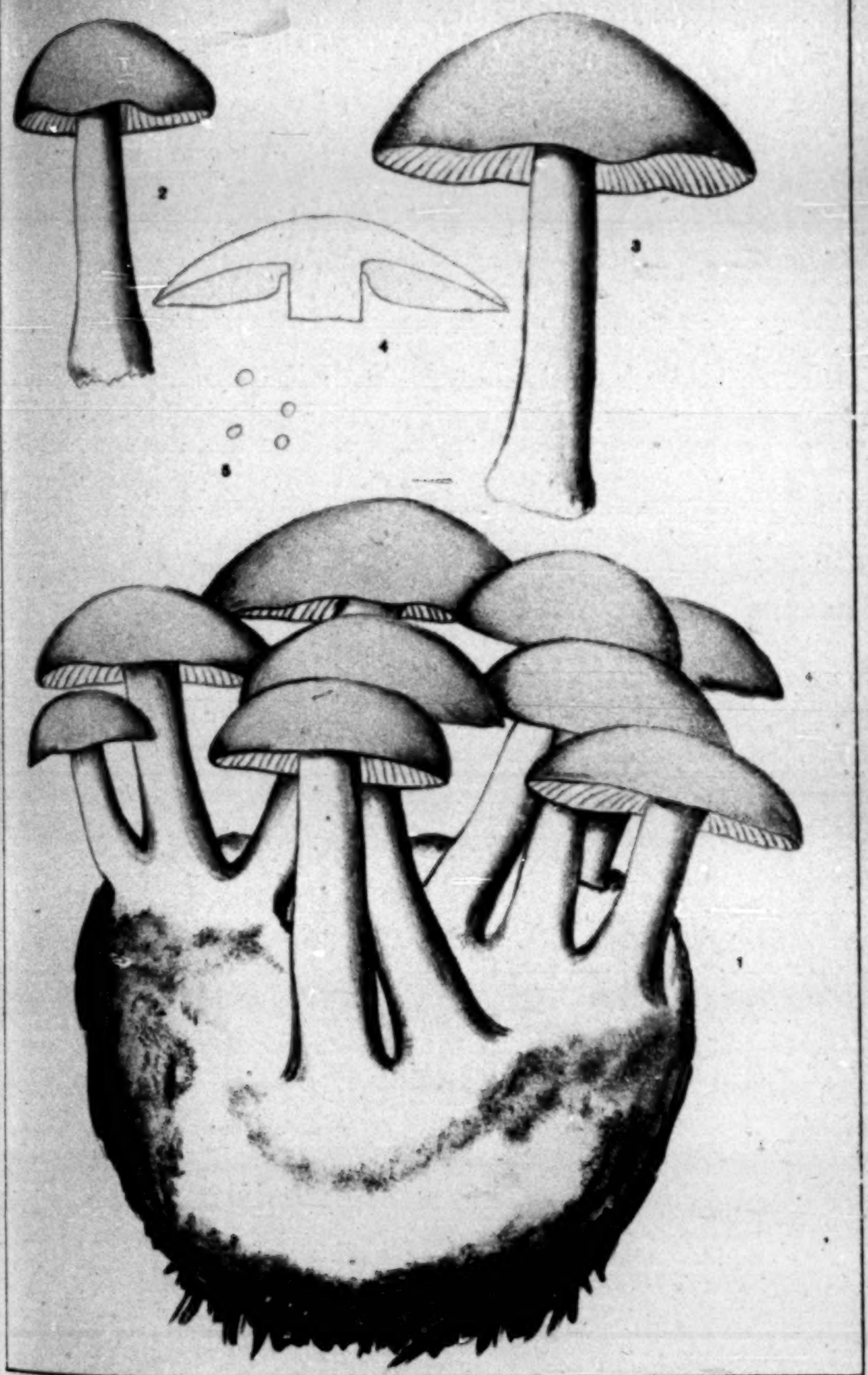
PLATE 94

Tricholoma unifactum Pk.

UNITED TRICHOLOMA

1 Cluster of plants united by a common fleshy base
2, 3 Two plants separated from the fleshy base
4 Vertical section of the upper part of a plant
5 Four spores, x 400

EDIBLE FUNGI



TRICHOLOMA UNIFACTUM Pk.
UNITED TRICHOLOMA

PLATE 95

Lactarius rimosellus Pk.

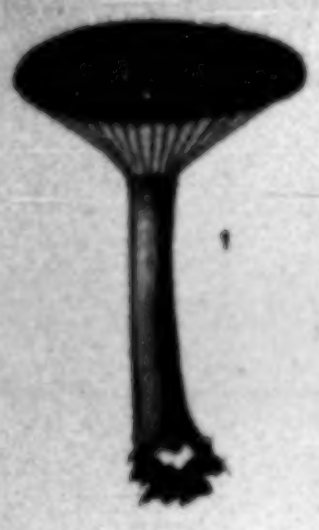
CRACKED LACTARIUS

1 Young plant showing central papilla of the cap
2 Young plant showing drop of milk from wound of gills
3 Mature plant
4 Vertical section of upper part of a mature plant
5 Transverse section of a stem
6 Four spores, x 400

Lactarius serifluus (DC.) Fr.

THIN JUICED LACTARIUS

7 Young plant showing whitish gills
8, 9 Two mature plants, one with cap centrally depressed
10 Vertical section of the upper part of a plant
11 Four spores, x 400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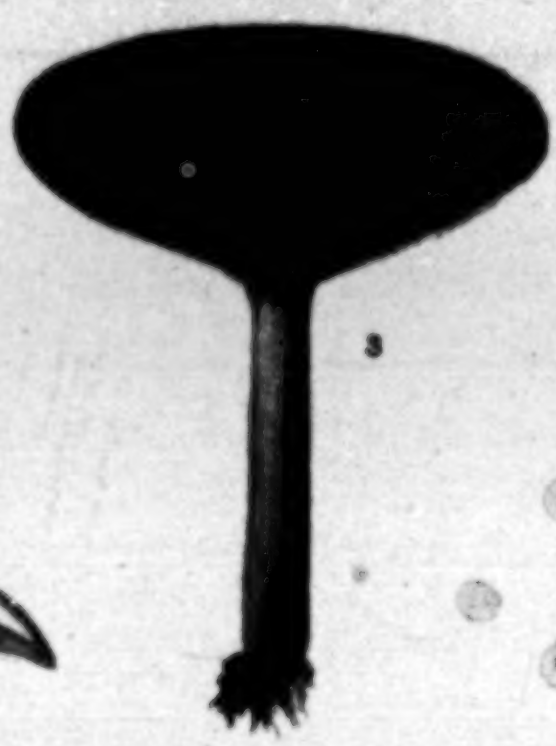
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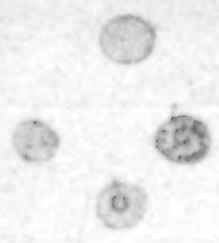
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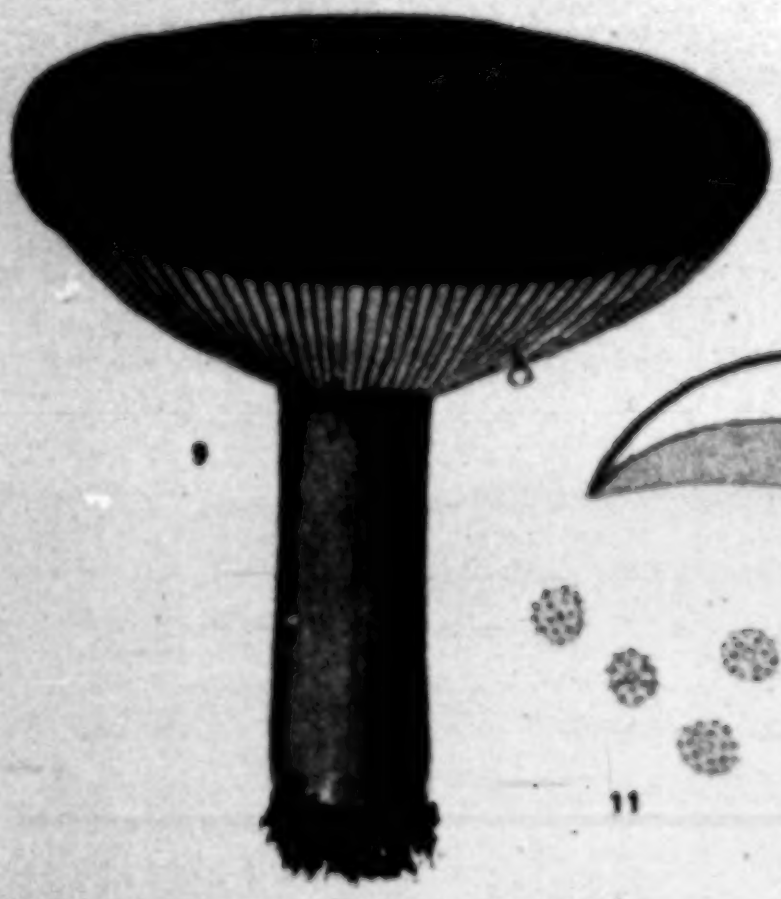
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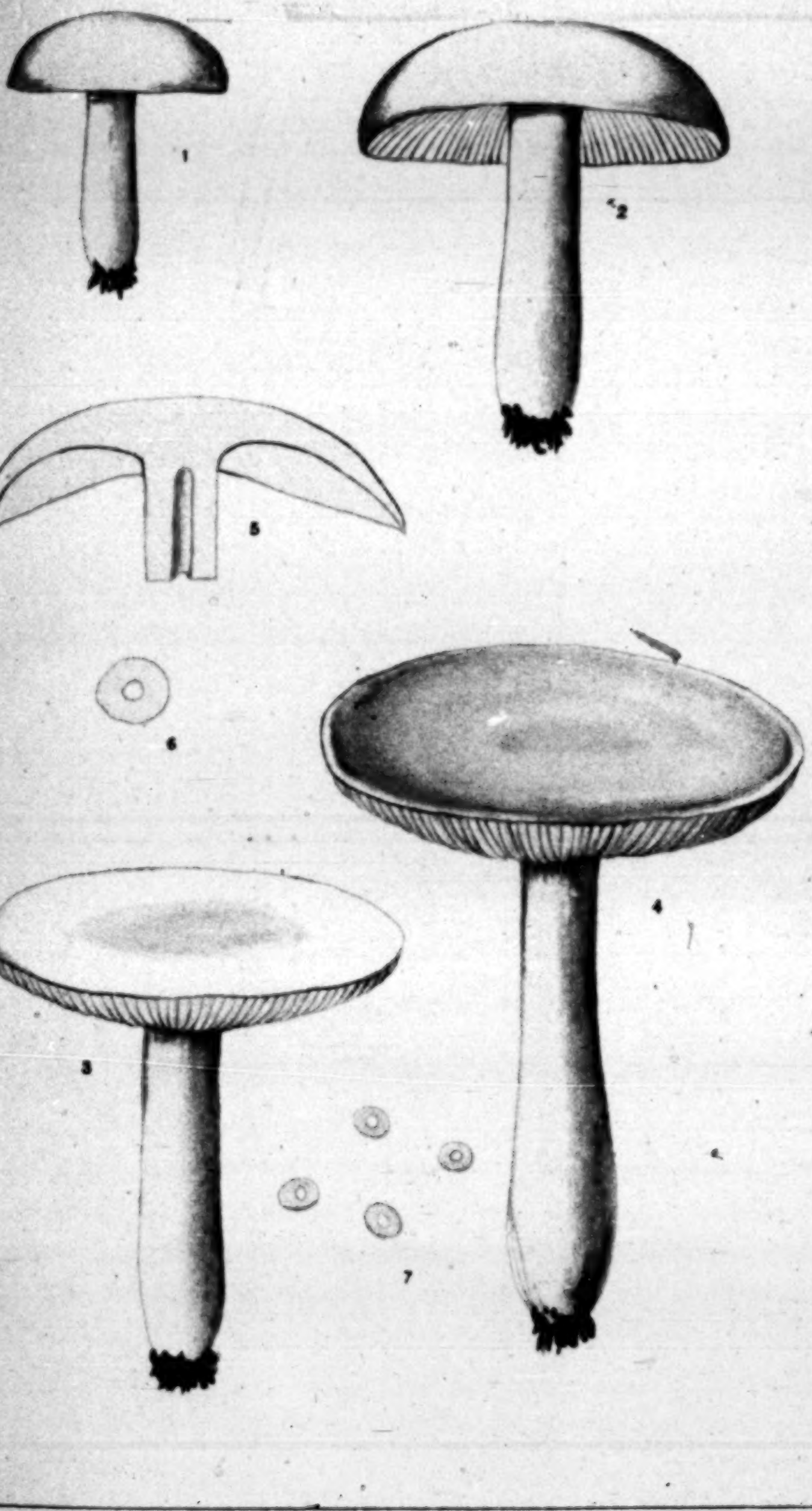
Fig. 1-6 LACTARIUS RIMOSELLUS Pk. Fig. 7-11 LACTARIUS SERIFLUUS Fr.
CRACKED LACTARIUS THIN JUICED LACTARIUS

PLATE 96

Russula albida Pk.

WHITISH RUSSULA

1 Young plant
2, 3 Mature plants, one showing center of cap tinged with yellow
4 Mature plant with margin of cap slightly curved upward
5 Vertical section of the upper part of a plant
6 Transverse section of a stem
7 Four spores, x 400



RUSSULA ALBIDA Pk.

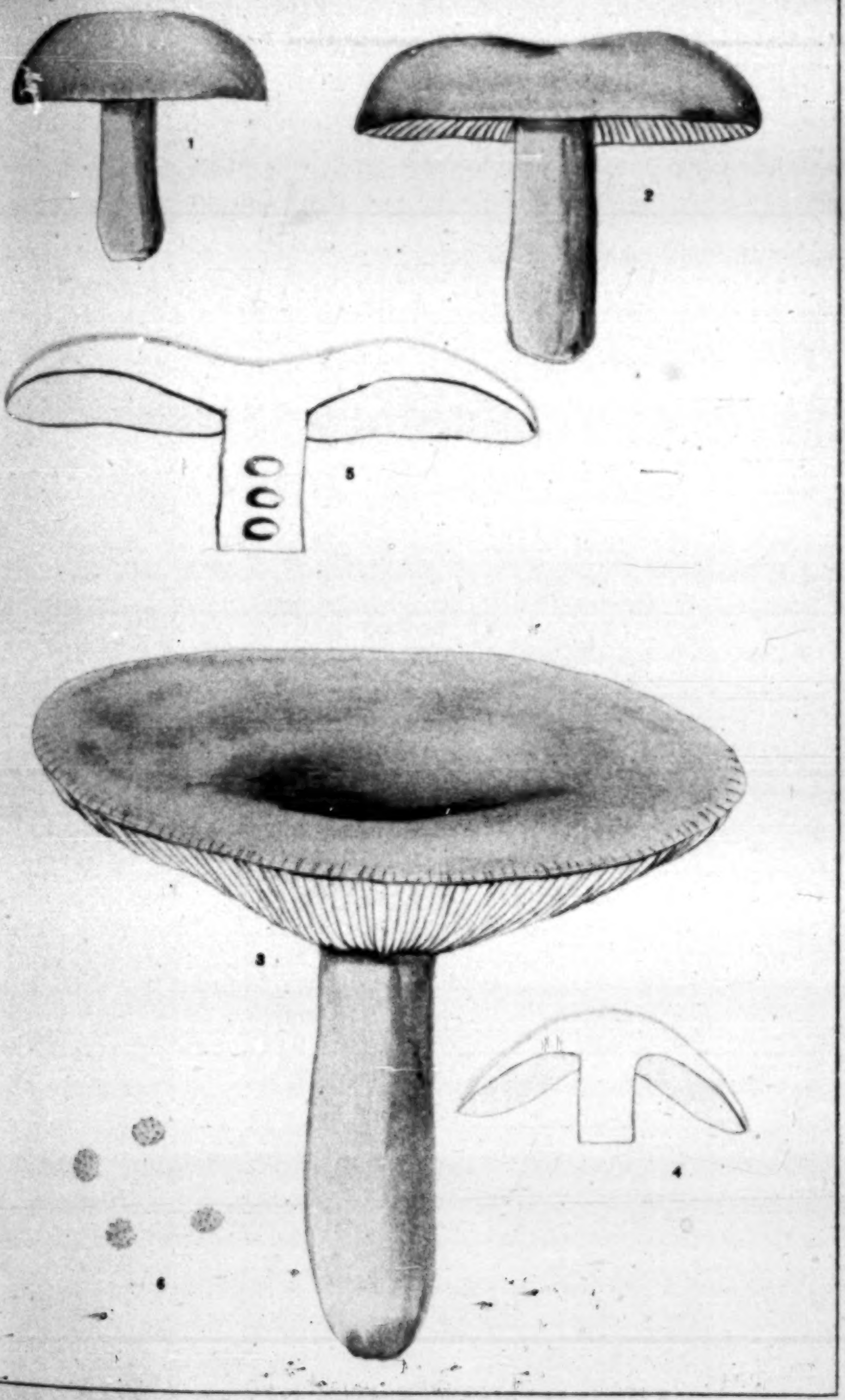
WHITISH RUSSULA

PLATE 97

Russula flavida Frost

YELLOWISH RUSSULA

1 Young plant
2 Mature plant with convex cap
3 Mature plant with expanded cap centrally depressed
4 Vertical section of the upper part of a young plant
5 Vertical section of the upper part of a mature plant
6 Four spores, x 400



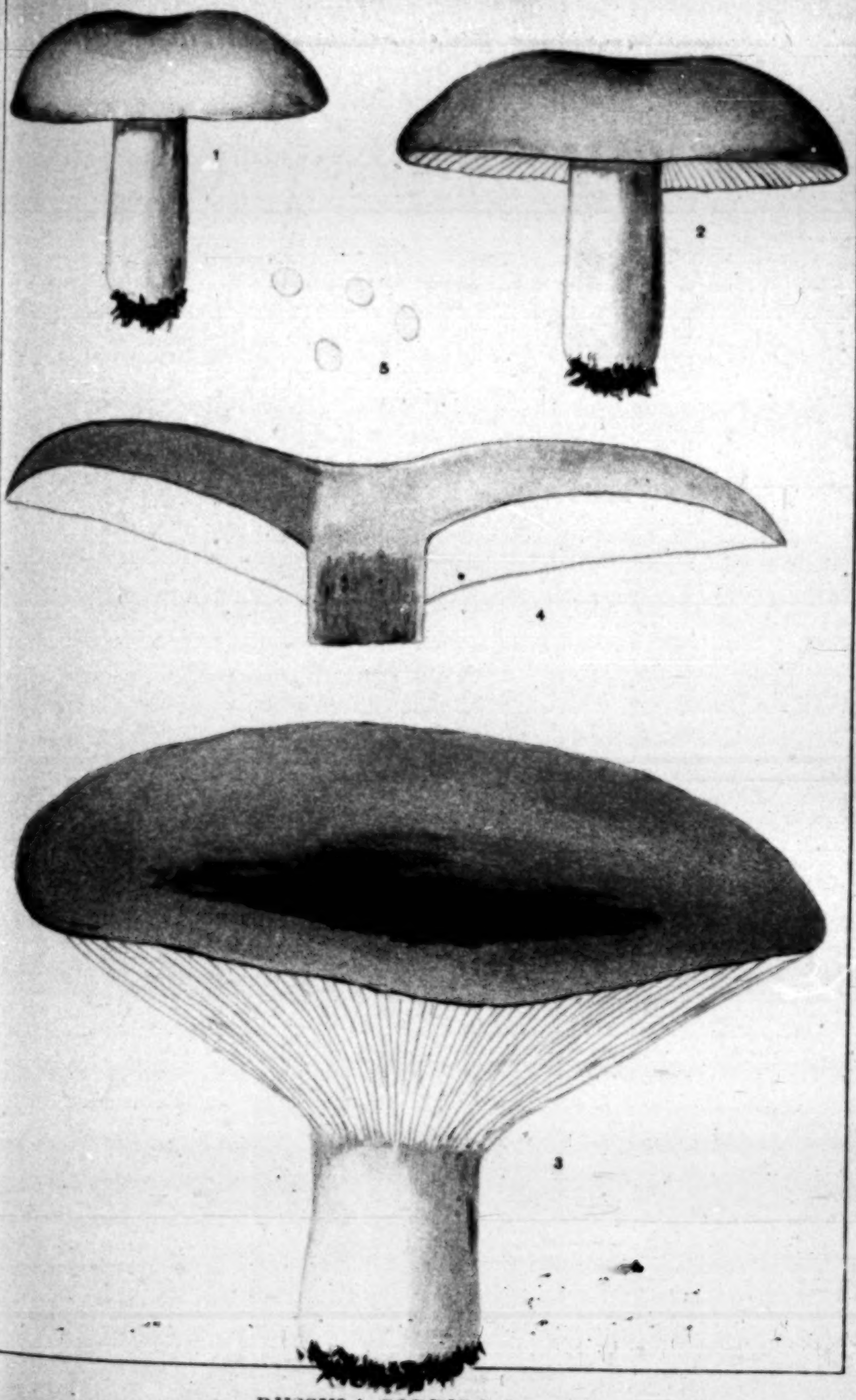
RUSSULA FLAVIDA FROST
YELLOWISH RUSSULA

PLATE 98

Russula sordida Pk.

SORDID RUSSULA

1 Young plant showing whitish cap
2 Immature plant with cap discolored
3 Mature plant with expanded cap centrally depressed
4 Vertical section of the upper part of a plant showing the pale color of the flesh when first cut in one part and the dark color soon assumed in another part
5 Four spores, x 400



RUSSULA SORDIDA Pk.

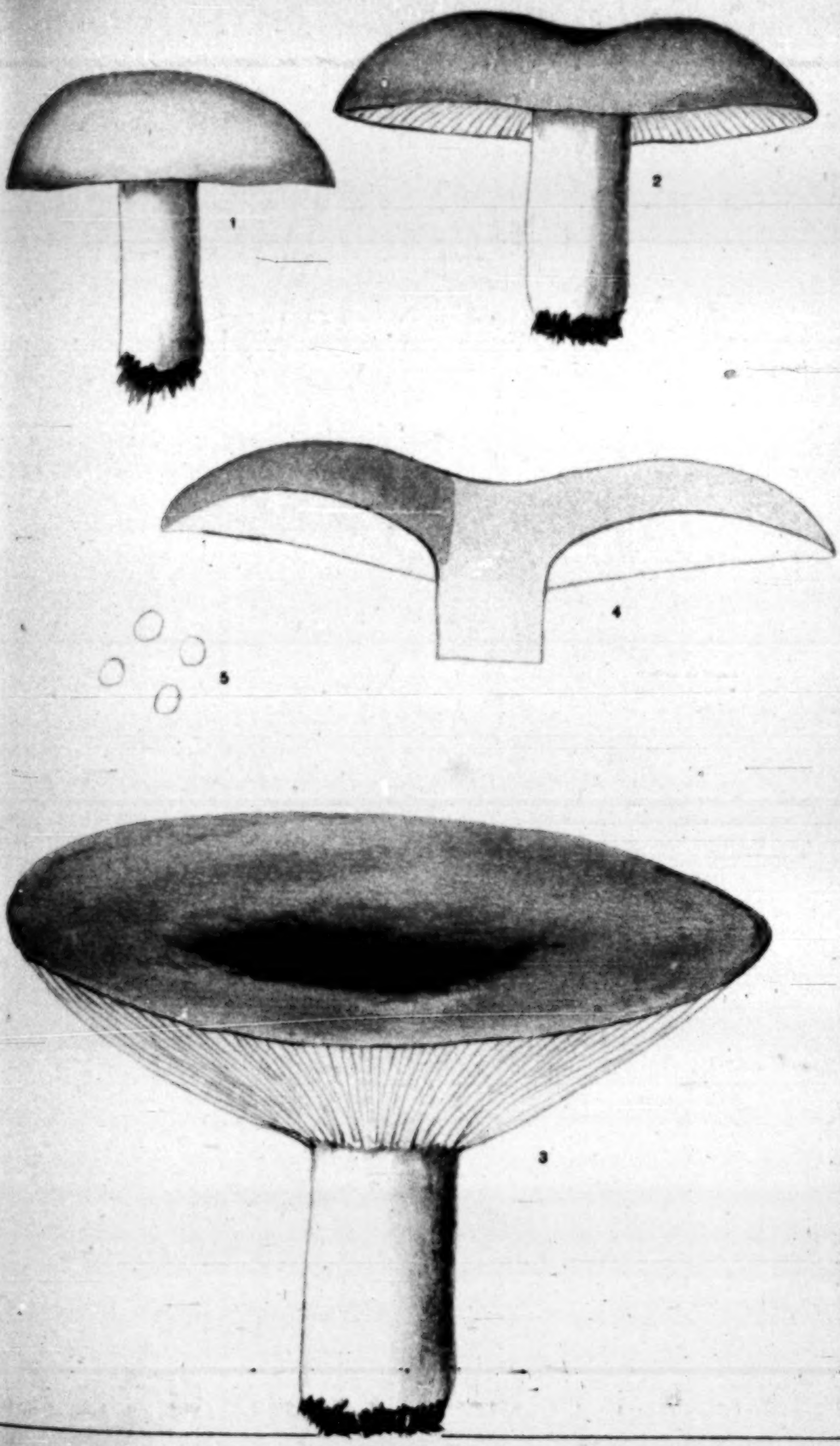
SORDID RUSSULA

PLATE 99

Russula subsordida Pk.

SUBSORDID RUSSULA

1 Young plant with whitish cap
2 Immature plant with cap discolored
3 Mature plant with expanded cap centrally depressed
4 Vertical section of the upper part of a plant showing the pale color of the flesh when first cut at the right and the dark color soon assumed at the left
5 Four spores, x 400



RUSSULA SUBSORDIDA Pk.

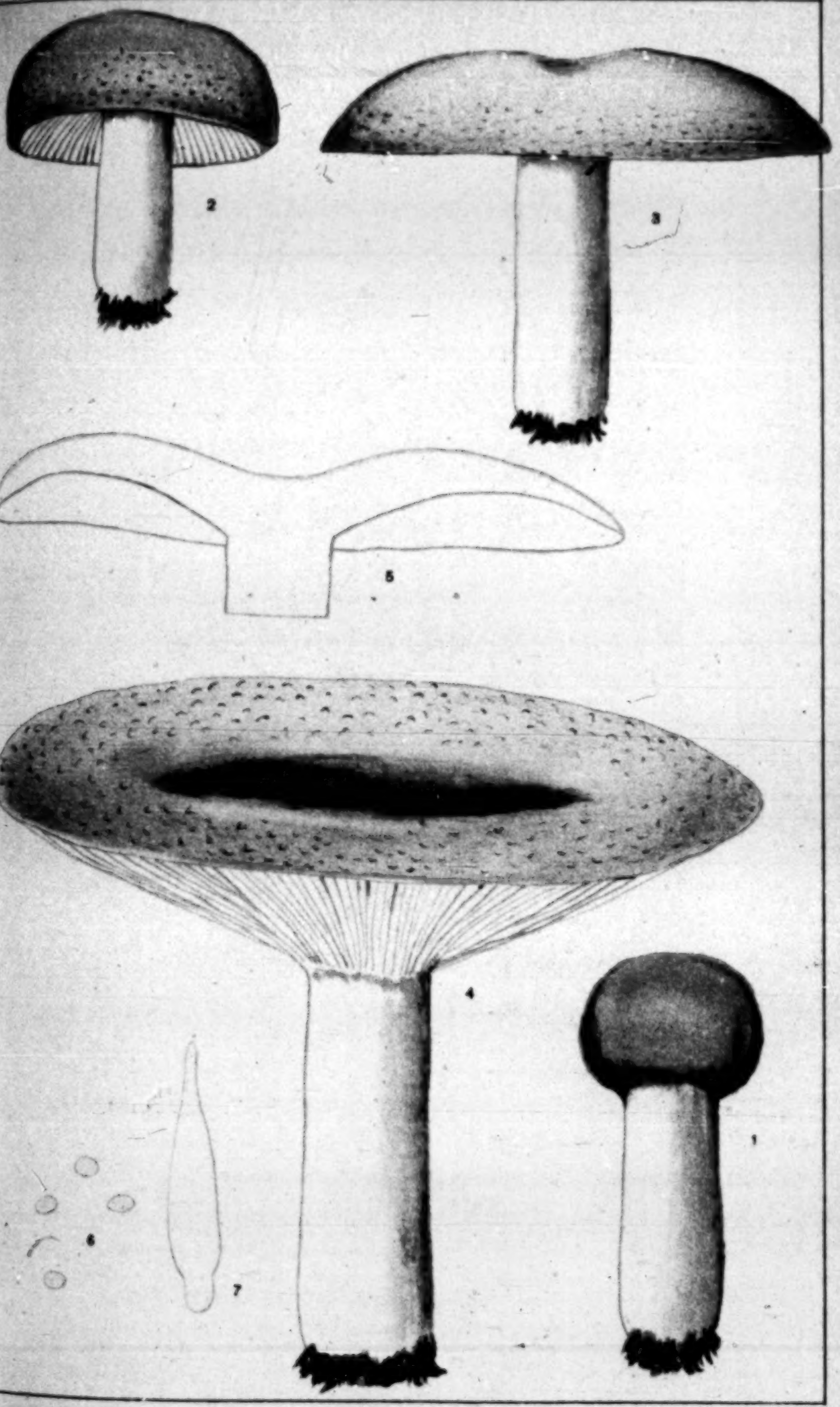
SUBSORDID RUSSULA

PLATE 100

Russula viridella Pk.

PALE GREEN RUSSULA

1 Very young plant with cap still closed
2, 3 Immature plants, one at the left showing the white gills
4 Mature plant
5 Vertical section of the upper part of a mature plant
6 Four spores, x 400
7 Cystidium, x 400



RUSSULA VIRIDELLA Pk.

PALE GREEN RUSSULA

PLATE 101

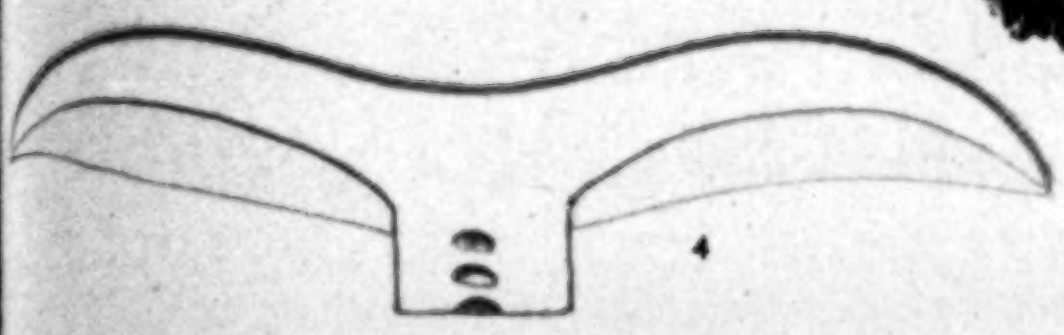
Russula variata Banning

VARIABLE RUSSULA

1 Young plant showing a green cap with purplish center
2 Mature plant with convex purplish cap
3 Mature plant with expanded green cap centrally depressed
4 Vertical section of the upper part of a mature plant
5 Four spores, x 400

1

2



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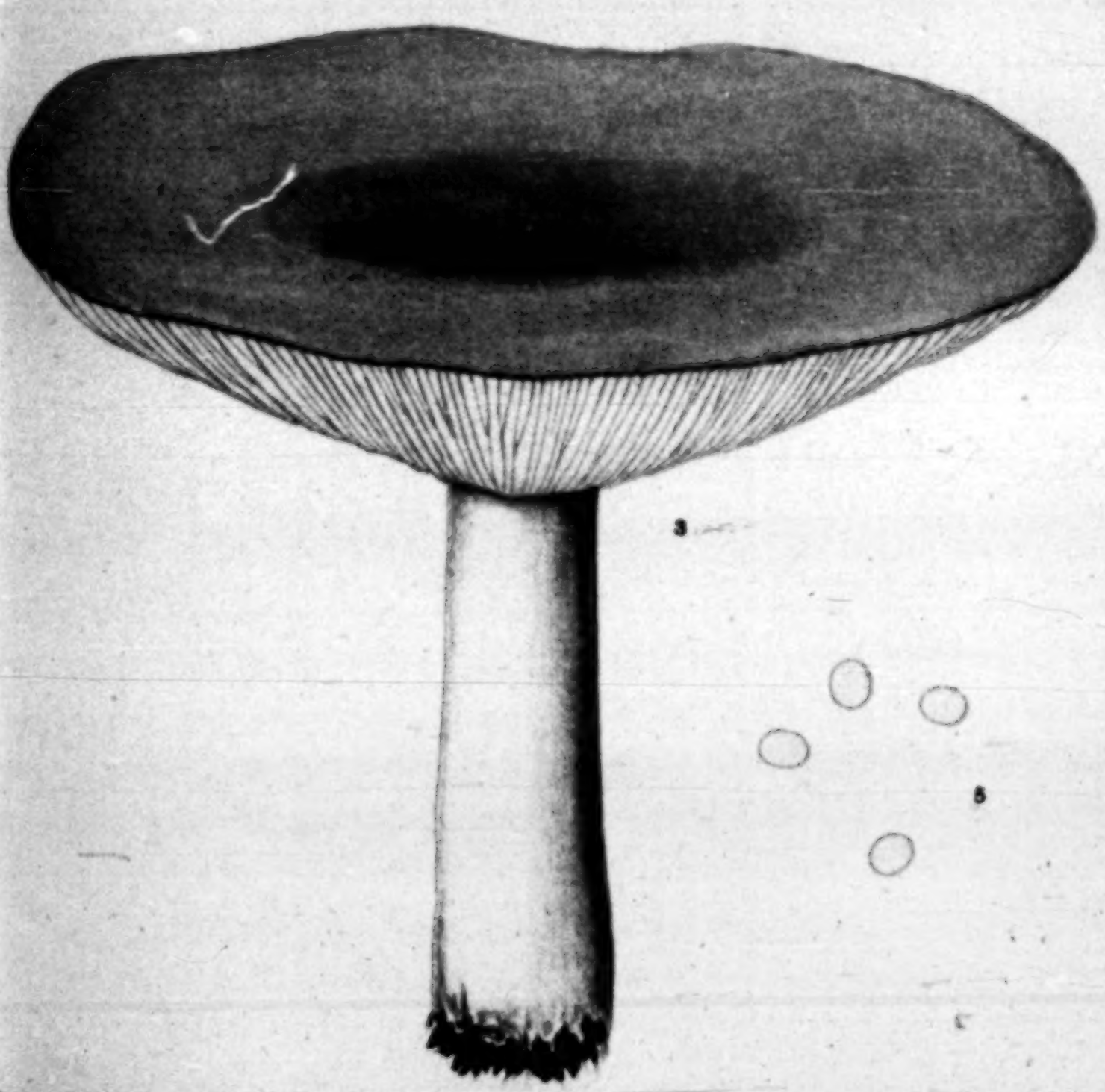

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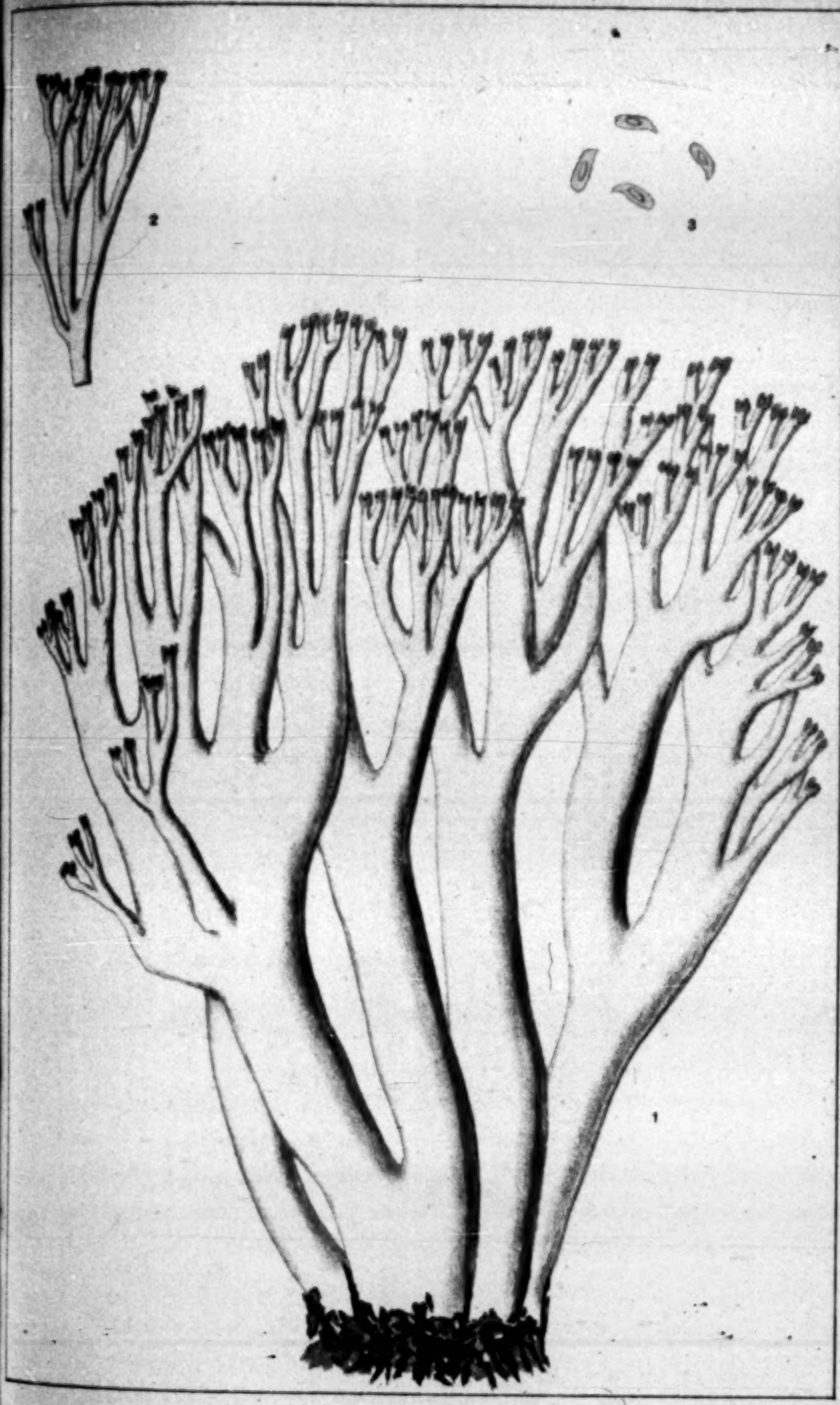
RUSSULA VARIATA BANNING
VARIABLE RUSSULA

PLATE 102

Clavaria conjuncta Pk.

CONJOINED CLAVARIA

1 Cluster of plants united at the base
2 Upper part of a branch
3 Four spores, x 400



CLAVARIA CONJUNCTA Pk.
CONJOINED CLAVARIA

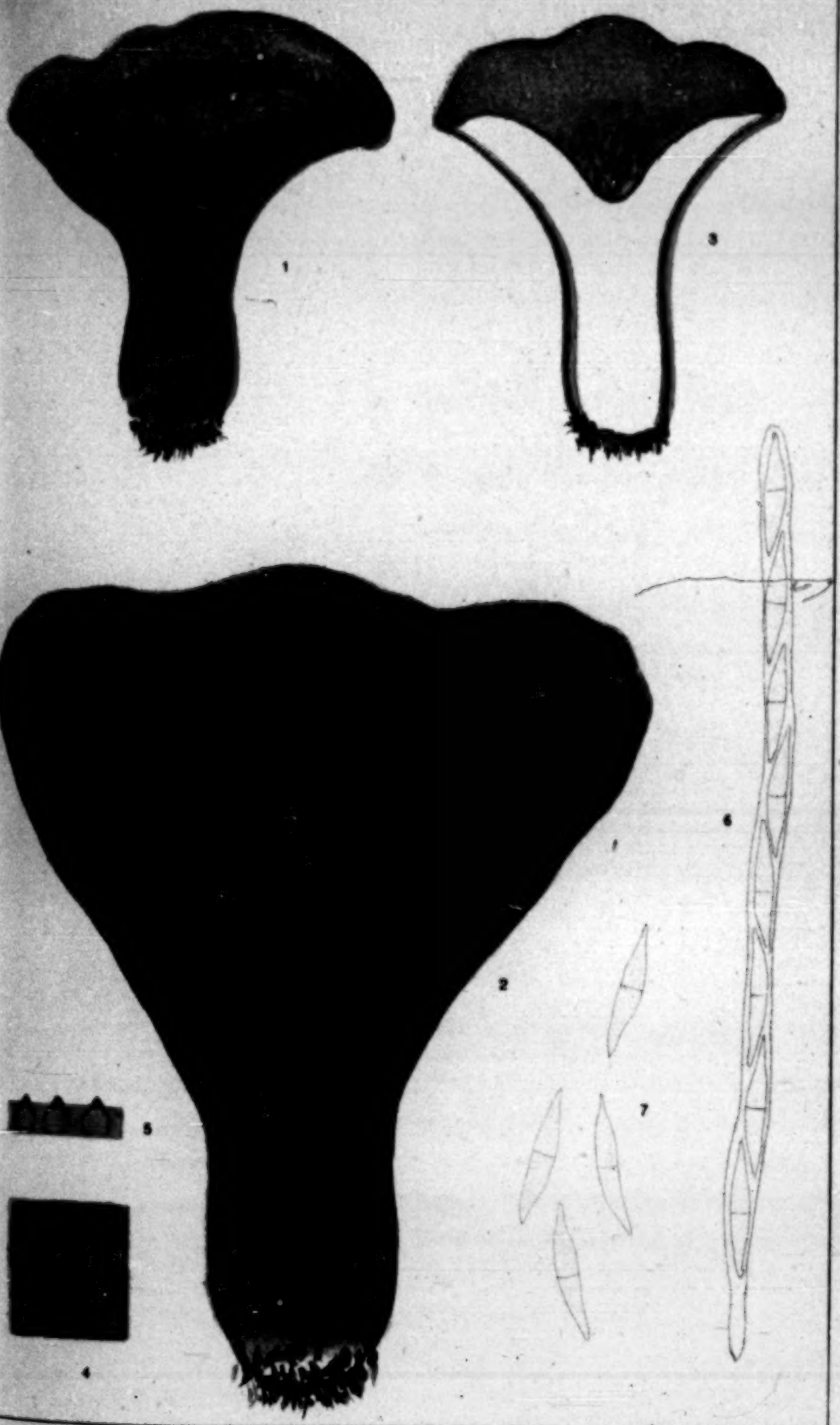
PLATE 103

Hypomyces lactifluorum (Schw.) Tul.

Red Hypomyces

1 Small host plant discolored by the parasite
2 Large host plant discolored by the parasite
3 Vertical section of a small discolored host plant
4 Birdseye view of a small piece of the hypomyces enlarged to show the blackish mouths of the perithecia or spore vessels
5 Side view of a small piece of the hypomyces enlarged and showing three perithecia sunk in the red subiculum
6 A linear ascus or spore sac containing eight spores, x 400
7 Four spores, x 400

EDIBLE FUNGI



HYPOMYCES LACTIFLUORUM (SCHW.) FR.

RED HYPOMYCES

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New York State Education Department

1906

New York State Museum

JOHN M. CLARKE, Director
CHARLES H. PECK, State Botanist

Bulletin 116

BOTANY 10

REPORT OF THE STATE BOTANIST 1906

Dr John M. Clarke, Director of Science Division:

I have the honor of submitting to you the following report of work done in the botanical department of the State Museum during the year 1906.

Specimens of plants for the State herbarium have been collected in the counties of Albany, Columbia, Dutchess, Essex, Fulton, Greene, Hamilton, Herkimer, Madison, Oneida, Putnam, Rensselaer, Saratoga, Steuben, Suffolk and Warren.

Specimens of New York species have been received from contributors and correspondents, that were collected in the counties of Albany, Allegany, Chautauqua, Columbia, Essex, Fulton, Herkimer, Dutchess, Madison, Monroe, Oneida, Onondaga, Orange, Orleans, Rensselaer, Richmond, Saratoga, Steuben, Suffolk, Tompkins, Warren and Washington.

The number of species of which specimens have been added to the State herbarium is 156. Of these, 60 are species new to the herbarium, 96 are not new. Of the former number, 20 are considered new or undescribed species and descriptions of these will be found in another part of this report. A list of the names of added species is given under the title "Species added to the herbarium."

The number of those who have contributed specimens is 61. This includes many who have sent extralimital specimens or specimens simply for identification, but if the specimens were in good condition when received and were suitable or desirable for the herbarium they have been preserved and credited to the sender as a contribution. A list of the names of the contributors and their respective contributions will be found under the title "Contributors and their contributions."

The number of species found or of which specimens have been

contributed that are deemed new to our New York flora is 67. A record of these with their localities and descriptions of new species is given under the title "Species not before reported."

Descriptions of five new but extralimital species and one new variety have been added to this chapter.

A record of new stations of rare plants, of new varieties and forms of well known species, remarks concerning distinguishing characters of closely related species or observations of unusual features in some species are given under the title "Remarks and observations." The number of New York species noticed in this chapter is 27.

The study of our fleshy fungi and the collection of specimens of them for the herbarium have been continued, though much of the season has been singularly unfavorable to their production. Rain and showers were frequent in the early part of summer but the prevailing low temperature was detrimental to the growth of these plants. As the weather became warmer the rains ceased and excessive dryness prevented their growth. September is usually one of the best months of the year for mushroom growths, but this season it was one of the poorest. Late fall rains, however, brought out a delayed crop which was available at a much later date than usual and helped to make good the deficiency of the earlier part of the season. The number of species of fungi added to the herbarium is 39 of which 17 are new species.

The trial of the edible qualities of our wild mushrooms has resulted in adding 11 species to our list of those deemed edible, and makes the whole number of New York species of this class 183. Of the 11 added species 9 have been illustrated by colored figures of natural size. Figures of the 2 remaining species, Russula earlei Pk. and Boletus rugosiceps Pk. have been published in preceding reports. Descriptions of the 11 species tested and approved this year will be found under the title "Edible fungi."

The study of our Crataegus flora has been continued with much interest. Specimens have been collected in the northern, eastern, central and southwestern parts of the State. The number of species added to the State flora is 8, of which two are new species. This addition makes the number of New York species now known 97. Many specimens of this genus still remain undetermined. The destructive influence of late frosts was clearly seen in the failure of many thorn bushes which bore a full crop of flowers to

develop any fruit. The essential floral organs were frozen and consequently the fruit failed to develop. In such cases the stamens and pistils are sometimes frozen before the buds open. When the flowers appear they look fresh and fair at a distance but on close inspection the stamens and pistils are seen to be dead and blackened. If the freeze is very severe after the buds are much swollen no species escapes. If less severe, only the flowers of the most tender species or those which are in the most susceptible condition are killed. During the past season many species of the Tomentosae group failed to develop fruit though at flowering time they were full of blossoms. Species in the same locality whose time of flowering is earlier may escape injury.

The comparatively large genera Hygrophorus and Russula present some peculiar difficulties. The subgenera are not sharply differentiated and in some cases American species appear to combine characters of two subgenera or do not in all respects agree with the characters ascribed to any of the subgenera. Nevertheless a revision of the New York species of these genera has been attempted and the Friesian arrangement of the subgenera and species followed as far as possible. Descriptions have been rewritten and in some cases made more full and satisfactory.

The plan of identifying specimens of plants for correspondents and others who send or bring them to the office for that purpose has been followed. This not only results in the dissemination of useful botanical knowledge, but also in sometimes acquiring interesting and valuable specimens for the herbarium that otherwise might fail to reach it. The number of those for whom determinations of specimens have been made is 82. The number of determinations is 435.

Botanical specimens representing 20 species of trees have been collected but not included in the foregoing enumeration. They are intended to replace the lost or damaged specimens of the swinging frames, which loss occurred while these were absent at the St Louis and Portland expositions.

An additional table case of specimens of parasitic fungi has been prepared and placed in the botanical exhibition room. It contains specimens of 24 species some of which are injurious to cultivated plants, some to wild plants.

The case containing the specimens of the Japanese edible mushroom Shiitake, Pleurotus bretschneideri Kalchb., on the branches where they grew, has been repaired and placed on ex-

hibition. It is surmounted by a bell jar filled with the dried mushrooms in the condition in which they are offered for sale in the markets of China and Japan.

Mr S. H. Burnham, the Assistant Botanist, has been chiefly occupied with office work. He has incorporated the collections of 1905 in their proper places, has disinfected and labeled the specimens, attended to the correspondence of the office in my absence, identifying specimens sent for determination and giving information sought concerning them. He has prepared a card catalogue with descriptive references of the new species of fungi described by the State Botanist.

Respectfully submitted

CHARLES H. PECK
State Botanist

Office of the State Botanist

Albany, December 26, 1906

SPECIES ADDED TO THE HERBARIUM

New to the herbarium

Allionia hirsuta *Pursh*
Amanitopsis pulverulenta *Pk.*
Ascochyta pisi *Lib.*
Aster arcifolius *Bu.*
A. elaeagnus *Bu.*
A. fragrans *Bu.*
A. multiformis *Bu.*
A. violaris *Bu.*
Boletus subpunctipes *Pk.*
Caryospora cariosa *Fairm.*
Collybia campanella *Pk.*
C. lacerata *Lasch.*
Cortinarius intrusus *Pk.*
C. validipes *Pk.*
Crataegus arcana *Beadle*
C. bissellii *Sarg.*
C. cognata *Sarg.*
C. deltoides *Ashe*
C. habereri *Sarg.*
C. noveboracensis *Sarg.*
C. scabrida *Sarg.*
C. tenella *Ashe*
Cynoglossum boreale *Fern.*
Didymium clavus (*A. & S.*) *Rabenh.*
Dryopteris pittsfordensis *Slo.*
Entoloma minus *Pk.*
Flammula expansa *Pk.*
Gaura coccinea *Pursh*
Hydnum luteopallidum *Schw.*
Hygrophorus burnhami *Pk.*
Hygrophorus luridus *B. & C.*
Hypocrea pallida *E. & E.*
Inocybe pallidipes *E. & E.*
Lepiota asperula *Atk.*
L. eriophora *Pk.*
Leptoglossum fumosum *Pk.*
Linum medium (*Planch.*) *Britton*
Marasmius phyllophilus *Pk.*
Mycena albogrisea *Pk.*
Nicandra physaloides *Gaertn.*
Ohleria modesta *Fckl.*
Omphalia pusillissima *Pk.*
Panicum deminutivum *Pk.*
Peckiella hymenii *Pk.*
Phyllosticta ampelopsidis *E. & M.*
P. smilacis *E. & E.*
P. sphaeropsidea *E. & E.*
Pleurotus terrestris *Pk.*
Polyporus galactinus *Berk.*
Puccinia peckii (*DeT.*) *Kell.*
Russula foetentula *Pk.*
R. modesta *Pk.*
R. pectinatoides *Pk.*
R. vesca *Fr.*
Scleroderma tenerum *B. & C.*
Septoria lycopersici *Speg.*
Steccherinum adustulum *Banker*
Stemonitis smithii *Macb.*
Tricholoma hirtellum *Pk.*
Viola incognita *Brainerd*

Not new to the herbarium

Agastache scrophulariaefolia (*Willd.*)
Amanitopsis volvata (*Pk.*) *Sacc.*
Aquilegia canadensis *L.*
Arctium lappa *L.*
Asarum canadense *L.*
Aster camptilis *Bu.*
A. claytoni *Bu.*
A. concolor *L.*
Boletus auriporus *Pk.*
B. frostii *Russ.*
B. nigrellus *Pk.*
B. peckii *Frost*
Boletus rugosiceps *Pk.*
Bromus tectorum *L.*
Castanea dentata (*Marsh.*) *Borkh.*
Catastoma circumscissum (*B. & C.*)
Chrysomyxa pyrolae (*DC.*) *Rostr.*
Chrysopsis mariana *Nutt.*
Clavaria botrytoides *Pk.*
C. cristata *Pers.*
Clitocybe amethystina (*Bolt.*)
C. monadelpha *Morg.*
C. ochropurpurea *Berk.*
Clitopilus prunulus (*Scop.*) *Fr.*

Coreopsis rosea *Nutt.*
Cornus alternifolia *L. f.*
C. candidissima *Marsh.*
Crataegus caesariata *Sarg.*
C. coccinea *L.*
C. ferentaria *Sarg.*
C. illuminata *Sarg.*
C. intricata *Lange*
C. laneyi *Sarg.*
C. pedicellata *Sarg.*
C. pringlei *Sarg.*
C. punctata *Jacq.*
C. spissiflora *Sarg.*
C. tenuiloba *Sarg.*
Craterellus cantharellus (*Schw.*)
Cypripedium acaule *Ait.*
Daedalea quercina (*L.*) *Pers.*
Dasystoma virginica (*L.*) *Britt.*
Dryopteris boottii (*Tuck.*) *Under.*
D. cristata (*L.*) *Gray*
D. cris. clintoniana (*Eat.*)
D. simulata *Dav.*
Eleocharis inter. habereri *Fern.*
E. melanocarpa *Torr.*
Gentiana crinita *Froel.*
Hydnum aurantiacum *A. & S.*
H. fennicum (*Karst.*) *Sacc.*
H. imbricatum *L.*
H. repandum *L.*
H. vellereum *Pk.*
H. zonatum *Batsch*
Hypopitys lanuginosa (*Mx.*) *Nutt.*
Ilex vert. cyclophylla *Robins.*
Inocybe calamistrata *Fr.*
Irpex canescens *Fr.*
Lactarius ful. fumosus *Pk.*
L. pergamenus *Fr.*
Lactarius piperatus *Fr.*
L. vellereus *Fr.*
L. volemus *Fr.*
Lespedeza angustifolia *Pursh*
L. hirta (*L.*) *Ell.*
L. virginica (*L.*) *Britt.*
Lobelia dortmanna *L.*
Lycopus sessilifolius *Gray*
Meibomia marilandica (*L.*) *Kuntze*
M. rigida (*Ell.*) *Kuntze*
Monarda punctata *L.*
Mycena galericulata (*Scop.*)
Physarum lateritium (*B. & R.*)
Polyporus schweinitzii *Fr.*
P. sulphureus (*Bull.*)
Polystichum acrostichoides (*Mx.*)
Polystictus simillimus *Pk.*
P. subsericeus *Pk.*
Populus balsamifera *L.*
Russula earlei *Pk.*
Sagina procumbens *L.*
Scirpus atro. pycnocephalus *Fern.*
S. cyp. pelius *Fern.*
Senecio obovatus *Muhl.*
Solidago tenuifolia *Pursh*
Sporobolus serotinus (*Torr.*) *Gray*
Stereum versicolor *Fr.*
Strobilomyces strobilaceus (*Scop.*)
Trillium erect. album *Pursh*
Tricholoma alboflavidum *Pk.*
T. nudum (*Bull.*) *Fr.*
Viburnum lentago *L.*
Viola blanda *Willd.*
V. cucullata *Ait.*
V. fimbriatula *Sm.*
Woodwardia areolata (*L.*) *Moore*

CONTRIBUTORS AND THEIR CONTRIBUTIONS

Mrs E. B. Blackford, Boston Mass.

Lactarius varius *Pk.*
Omphalia epichysium *Pers.*
Hygrophorus serotinus *Pk.*

Miss M. B. Church, Albany

Pleurotus porrigens (*Pers.*) *Fr.*

Mrs M. S. DeCoster, Little Falls

Viola incognita *Brainerd*
Viola selkirkii *Pursh*

Mrs G. M. Dallas, Philadelphia Pa.
Opuntia humifusa *Raf.*

Miss Alice Eastwood, San Francisco Cal.
Lentinus magnus *Pk.*

Mrs L. L. Goodrich, Syracuse
Trillium erectum album *Pursh*

Mrs M. A. Knickerbocker, San Francisco Cal.
Scoliopus bigelovii *Torr.*

Miss E. A. Lehman, Winston-Salem N. C.
Monotropsis lehmanae *Burnh.*

Mrs J. Rogers, Ausable Forks
Lepiota naucinoides *Pk.*

Miss A. M. Ryan, New London Ct.
Marsonia violae (*Pass.*) *Sacc.*

Miss T. L. Smith, Worcester Mass.
Russula modesta *Pk.*

Mrs F. C. Sherman, Syracuse
Pleurotus ulmarius *Fr.*

Mrs C. E. Taft, New York city
Collybia velutipes (*Curt.*) *Fr.*

Mrs E. S. Tomlinson, New York city
Polystichum acrostichoides incisum (*Gr.*) *Under.*

F. H. Ames, Brooklyn
Ammodenia peploides (*L.*) *Bupr.* | Hudsonia tomentosa *Nutt.*
Woodwardia areolata (*L.*) *Moore*

J. C. Arthur, Lafayette Ind.
Aecidium coloradense *Diet.* | Peridermium boreale *Arth.*
Peridermium carneum (*Bosc*) *S. & E.*

G. F. Atkinson, Ithaca
Cortinarius intrusus *Pk.* | Lepiota asperula *Atk.*
Russula constans *Karst.*

H. J. Banker, Greencastle Ind.

Onygena equina *Pers.*
Steccherinum adustulum *Banker*

Elam Bartholomew, Stockton Kan.

Aecidium abundans *Pk.*
Ae. allenii *Clint.*
Ae. diodiae *Burr.*
Ae. grindeliae *Griff.*
Ae. grossulariae (*Pers.*) *Schm.*
Ae. pammelii *Trel.*
Ae. punctatum *Pers.*
Ae. solidaginis *Schw.*
Albugo amaranthi (*Schw.*) *Kze.*
A. candidus (*Pers.*) *Kze.*
Arthosporium compositum *Ell.*
Cercospora pachypus *E. & K.*
C. vignae *E. & E.*
Coleosporium solidaginis (*Schw.*)
Coniosporium arundinis (*Cd.*) *Sacc.*
Cronartium asclepiadeum *Berk.*
Cucurbitaria salicina *Fckl.*
Cudonia circinans (*Pers.*) *Fr.*
Diplodia liriodendri *Pk.*
Dothidea linderae *Ger.*
Exobasidium vaccinii (*Fckl.*) *Wor.*
Geaster pectinatus *Pers.*
Geoglossum hirsutum *Pers.*
G. peckianum *Cke.*
Gymnosporangium clavipes *C. & P.*
Humaria cestrica *E. & E.*
Hypomyces lactifluorum (*Schw.*) *Tul.*
Leotia lubrica (*Scop.*) *Pers.*
Macrosporium ornatissimum *E. & B.*
Marsonia castagnei (*D. & M.*) *Sacc.*
Massariella bufonia (*B. & Br.*) *Tul.*
Meliola nidulans (*Schw.*) *Cke.*
Mitrula olivacea (*Pers.*) *Sacc.*
M. serpentina (*Muell.*) *Mass.*
Oidium monilioides *Lk.*
Peronospora calotheca *DeBy.*
P. euphorbiae *Fckl.*
Phyllachora graminis panici (*Schw.*)
Plasmopara geranii (*Pk.*) *B. & DeT.*
Psilocybe sabulosa *Pk.*
Puccinia absinthi *DC.*
P. agropyri *E. & E.*
P. asparagi *DC.*
P. asteris *Duby*
P. caricis (*Schum.*) *Reb.*
P. cyperi *Arth.*
Puccinia fraxinate (*Lk.*) *Arth.*
P. helianthi *Schw.*
P. heucherae (*Schw.*) *Diet.*
P. lycii *Kalchb.*
P. menthae *Pers.*
P. muhlenbergiae *A. & H.*
P. physalidis *Pk.*
P. pimpinellae (*Strauss.*) *Lk*
P. prenanthis (*Pers.*) *Fckl.*
P. proserpinacae *Farl.*
P. purpurea *Cke.*
P. rubinella (*Pers.*) *Arth.*
P. silphii *Schw.*
P. stipae *Arth.*
P. tecta *E. & B.*
P. tosta *Arth.*
P. verbesinae *Schw.*
P. veroniae *Schw.*
Rhizographus fusariisporus *E. & E.*
Rhizopus nigricans *Ehrenb.*
Schizothyrella fraxini *E. & E.*
Sclerospora graminicola (*Sacc.*)
Scolecotrichum asclepiadis *E. & E.*
Septoria aurea destruens *E. & E.*
S. munroae *E. & B.*
Sorosporium syntherismae (*Pk.*) *Farl.*
Sphaeropsis cydoniae *C. & E.*
Stichopsora solidaginis (*Schw.*) *Diet.*
Teichospora populina *E. & E.*
Tricholoma portentosum *Fr.*
Tubercinia clintoniae *Kom.*
Tuberculina persicina (*Ditm.*) *Sacc.*
Typhula muscicola (*Pers.*) *Fr.*
Uromyces caladii (*Schw.*) *Farl.*
U. euphorbiae *C. & P.*
U. gentianae *Arth.*
U. glycyrrhizae (*Reb.*) *Magn.*
U. gnaphalii *E. & E.*
U. hordei *Tracy*
U. howei *Pk.*
U. junci (*Desm.*) *Tul.*
U. lespedezae (*Schw.*) *Pk.*
U. trifolii (*Hedw.*) *Lev.*
Ustilago utriculosa (*Nees*) *Tul.*
Xylaria digitata (*L.*) *Grev.*

M. S. Baxter, Rochester

Crataegus laneyi *Sarg.*
C pedicellata *Sarg.*
Crataegus tenuiloba *Sarg.*
Pentstemon laevigatus *Soland.*

M. S. Baxter and V. Dewing, Rochester

Allionia hirsuta *Pursh*
Gaura coccinea *Pursh*
Conringia orientalis (*L.*) *Dum.*

R. C. Benedict, New York city

Dryopteris pittsfordensis *Slosson*

A. F. Blakeslee, Cambridge Mass.

Phycomyces nitens (*Ag.*) *Kunze*

F. S. Boughton, Pittsford

Clitocybe dealbata *Sow.*
Pleurotus subareolatus *Pk.*
Tricholoma columbetta *Fr.*

F. J. Braendle, Washington D. C.

Clavaria cinerea *Bull.*
Collybia zonata *Pk.*
Geaster saccatus *Fr.*
Isaria truncata *Pers.*
Mycenastrum spinulosum *Pk.*
Viola villosa *Walt.*

S. H. Burnham, Sandy Hill

Cordyceps capitata (*Holmsk.*) *Lk.*
Cynoglossum boreale *Fern.*
Erysiphe polygoni *DC.*
Flammula expansa *Pk.*
Hygrophorus burnhami *Pk.*
Lentinus spretus *Pk.*
Pleurotus terrestris *Pk.*
Polyporus borealis *Wahl.*
Polystichum acrostichoides (*Mx.*)
Russula cyanoxantha (*Schaeff.*) *Fr.*
Scapania irrigua (*Nees*) *Dum.*
Timmia megapolitana *Hedw.*
Lepiota asperula *Atk.*

G. H. Chadwick, Albany

Thelephora schweinitzii *Pk.*

G. D. Cornell, Coopers Plains

Arabis glabra (*L.*) *Bernh.*
Hieracium praealtum *Vill.*
Hypericum ascyron *L.*
Lilium canadense *L.*
Liriodendron tulipifera *L.*
Magnolia acuminata *L.*
Solidago juncea *Ait.*
Sisyrinchium angustifolium *Mill.*

W. C. Cottrell, Gloversville

Nicandra physaloides *Gaertn.*

Simon Davis, Brookline Mass.

Agaricus camp. hortensis *Cke.*
Coprinus plicatilis *Fr.*
C. stenocoleus *Lindb.*
Eccilia unicolor *Pk.*
Entoloma sericellum *Fr.*
E. sericeum (*Bull.*) *Fr.*
Galera sphagnorum *Pers.*
Hygrophorus davisii *Pk.*
Hygrophorus luridus *B. & C.*
H. mephiticus *Pk.*
H. nitratus (*Pers.*) *Fr.*
H. prat. albus *Sacc.*
Inocybe infelix *Pk.*
Leptonia transformata *Pk.*
Marasmius scorodonius *Fr.*
Psathyrella angusticeps *Pk.*
Russula compacta *Frost*

W. T. Davis, New Brighton

Aronia arbutifolia (*L.*) *Medic.*
Aronia atropurpurea *Britton*

Frank Dobbin, Shushan

Arthonia quintaria *Nyl.*
Arthonia radiata (*Pers.*) *Th. Fr.*
Discina orbicularis *Pk.*

Philip Dowell, Port Richmond

Dryopteris boottii (*Tuck.*) *Under.*
D. cristata (*L.*) *Gray*
D. crist. clintoniana (*Eat.*)
D. crist. marginalis *Dav.*
Dryopteris goldieana (*Hook.*) *Gray*
D. pittsfordensis *Slos.*
D. simulata *Dav.*
Woodwardia areolata (*L.*) *Moore*

C. E. Fairman, Lyndonville

Brachysporium obovatum (*Berk.*) *Sacc.*
Caryospora cariosa *Fairm.*
Didymium clavus (*A. & S.*) *Rabh.*
Nemosphaeria fairmani *Sacc.*
Ohleria modesta *Fckl.*
Physarum lateritium (*B. & R.*) *Rost.*

O. E. Fischer, Detroit Mich.

Agaricus camp. hortensis *Cke.*
Lepiota eriophora *Pk.*
Hydnum adustum *Schw.*

N. M. Glatfelter, St Louis Mo.

Guepinia palmiceps *Berk.*
Lepiota cep. lutea *With.*
Merulius rubellus *Pk.*
Pterula densissima *B. & C.*
Thelephora caespitulans *Schw.*

P. W. Graff, Storrs Ct.

Poronia macrospora *Pk.*
Xylaria polymorpha combinans *Pk.*

Cephas Guillet, Toronto Ont.

Hygrophorus miniatus *Fr.*
Lactarius paludinellus *Pk.*

C. C. Hanmer, East Hartford Ct.

Collybia lacerata *Lasch.*
Entoloma cuspidatum *Pk.*
Hygrophorus chlorophanus *Fr.*
Panus levis *B. & C.*

M. E. Hard, Chillicothe O.

Hydnum ochraceum *Pers.*
Tricholoma fumescens *Pk.*

J. J. Hare, Whitby Ont.

Hypholoma sublateritium squamosum *Cke.*

J. E. S. Heath, South Pasadena Cal.

Daldinia vernicosa (*Schw.*) *C. & D.*

A. P. Hitchcock, New Lebanon

Lycoperdon giganteum *Batsch*

G. S. Howell, Rockville Ind.

Tricholoma album *Schaeff.*

C. H. Kauffman, Ann Arbor Mich.

Crepidotus ralfsii *B. & Br.*
Cortinarius multiformis *Fr.*
Hypholoma vinosum *Kauff.*
Lepiota gracilis *Pk.*
Mycena glutinipes *Kauff.*
Pleurotus petaloides (*Bull.*) *Fr.*

W. A. Kellerman, Columbus O.

Galera kellermani *Pk.*
Psathyrella hirta *Pk.*

F. D. Kern, Lafayette Ind.

Puccinia graminis *Pers.*

R. B. Mackintosh, Peabody Mass.

Agaricus campester *L.*
Agaricus rodmani *Pk.*

Charles McIlvaine, Cambridge Md.

Lepiota morgani *Pk.*

George E. Morris, Waltham Mass.

Hygrophorus pallidus *Pk.*
H. ruber *Pk.*
Lepiota eriophora *Pk.*
Steccherinum adustulum *Banker*

L. J. Muchmore, Batavia

Hydnum luteopallidum *Schw.*
Oligonema nitens (*Lib.*) *Rost.*
Stemonitis smithii *Macb.*

F. M. Rolfs, Mountain Grove Mo.

Phyllosticta rubra *Pk.*

W. H. Ropes, Salem Mass.

Agaricus micromegethus *Pk.*

I. M. Shepherd, Trenton, N. J.

Morchella esculenta (*L.*) *Pers.*

F. S. Smith, Angelica

Bacillus amylivorus *Burr.*

Fusicladium pirinum (*Lib.*) *Fckl.*

Perley Spaulding, St Louis Mo.

Fomes annosus *Fr.*
Hydnum artocreas *Berk.*
Merulius lac. verrucifer *Quel.*
M. rubellus *Pk.*

E. B. Sterling, Trenton N. J.

Arachnion album *Schw.*
Calostoma cinnabarinum *Desv.*
Inocybe sterlingii *Pk.*
Lycoperdon excoriatum *Lloyd*
L. pusillum *Batsch*
L. serotinum *Bon.*
L. stellare (*Pk.*) *Lloyd*
Lycoperdon tessellatum *Lloyd*
Pholiota discolor *Pk.*
Pluteus petasites *Fr.*
Sarcoscypha dawsonensis *Pk.*
Scleroderma aurantiaca *Pers.*
S. cepa *Pers.*
S. verrucosum (*Bull.*)

D. R. Sumstine, Wilkinsburg Pa.

Pyronema leucobasis (*Pk.*) *Sacc.*

Hermann von Schrenk, St Louis Mo.

Paxillus panuoides *Fr.*
Trametes serialis *Fr.*

K. F. Symonds, Utica

Clitocybe ochropurpurea *Berk.*

E. A. White, Storrs Ct.

Phallogaster whitei *Pk.*

T. E. Wilcox, Washington D. C.

Boletus retipes *B. & C.*
B. rimosellus *Pk.*
B. subtomentosus *L.*
Clavaria pistillaris *L.*
Collybia strictipes *Pk.*
Hymenogaster anomalus *Pk.*
Tricholoma columbetta *Fr.*

W. W. Eggleston, New York city

By exchange

Crataegus arcana *Ashe*
C. coccinea *L.*
C. cognata *Sarg.*
Crataegus deltoides *Ashe*
C. dissona *Sarg.*
C. dodgei *Ashe*

Crataegus glaucophylla *Sarg.*
C. intricata *Lange*
C. matura *Sarg.*
Crataegus modesta *Sarg.*
C. pentandra *Sarg.*
C. pruinosa *Wendl.*
Crataegus tenella *Ashe*

SPECIES NOT BEFORE REPORTED

Allionia hirsuta Pursh

Near Rochester. August. M. S. Baxter and V. Dewing. Introduced from the western states. It is Oxybaphus hirsutus Sweet.

Amanitopsis pulverulenta n. sp.

Pileus thin, convex becoming nearly plane, pulverulent, squamose in the center, even on the margin, white or creamy white, odor feeble or none; lamellae thin, unequal, narrowed behind, free or nearly so, moderately close, subventricose, whitish; stem equal or slightly tapering upward, bulbous, solid, pulverulent or furfuraceous, white; spores subelliptic, .0003–.0004 of an inch long, .0002–.00024 broad.

Pileus 1–2 inches broad; stem 1–2 inches long, 2–3 lines thick. Shaded banks by roadsides. Port Jefferson, Suffolk co. August.

This species is well marked by its white color and the copious mealiness of the pileus and stem. It is apparently closely related to Amanitopsis pubescens (Schw.) but it differs from the description of that species in having the pileus and stem pulverulent instead of pubescent and in the former being squamose in the center. There is no annulus and the slight remains of a membranous volva are seen in very young specimens only. In the dried specimens the lamellae have assumed a pale yellowish cinnamon hue.

Ascochyta pisi Lib.

Living pods of peas and beans. Menands, Albany co. July. This parasitic fungus produces discolored spots on the pods similar to the anthracnose spots of bean pods, but the spores of this fungus are uniseptate, those of the anthracnose, simple.

Aster arcifolius Bu.

Lake Minnewaska, Ulster co. September. Prof. E. Burgess has made a special study of the asters of our country and his revision and elucidation of the Biotian division of the genus enables

me to add to our New York flora several species which were formerly supposed to be varieties of Aster divaricatus, A. macrophyllus and other closely related species.

Aster biformis Bu.

Rathboneville, Steuben co. and Voorheesville, Albany co. August and September. In this species the lower stem leaves are petiolate and cordate with a deep narrow sinus, the upper leaves are abruptly reduced to a smaller size and are nearly or quite sessile. This difference between the upper and lower leaves is suggestive of the specific name.

Aster camptilis Bu.

Low rocky ground. Lake Minnewaska. September. A slender aster with a weak stem which is often reclined or bent as if too feeble to support its own branches or hold itself erect. This character is suggestive of the name bent stemmed aster.

Aster claytoni Bu.

Open places. Menands, Albany co. September. A large and variable species belonging to the group Divaricati. Specimens are sometimes 3 feet tall.

Aster elaeagnus Bu.

North Elba, Essex co. August. A northern species having orbicular or ovate radical leaves and variable stem leaves which are pale and hairy on the under side. This gives a scurfy appearance suggestive of the scurfy character of Elaeagnus leaves. The species belongs to the group Macrophylli.

Aster fragrans Bu.

Round Lake, Saratoga co. September. This species differs from A. divaricatus, to which it was formerly referred, in its more persistent fragrance, more compact panicle of flowers and more truncate base of its leaves.

Aster multiformis Bu.

Lake Minnewaska, Ulster co. September. A species remarkable for its long slender rootstocks and the many forms shown by the leaves of the same plant.

Aster violaris Bu.

Rathboneville, Steuben co. August. This species is distinguished by its suborbicular and reniform apiculate radical and lower stem leaves. It belongs to the group Macrophylli.

Boletus subpunctipes n. sp.

Pileus fleshy, broadly convex, often uneven on the surface, becoming soft with age, brown, reddish brown when dry, flesh white, slowly becoming dingy where cut or broken, taste mild; tubes nearly plane in the mass, adnate or but slightly depressed around the stem, the mouths small, round, whitish or grayish white, changing to reddish brown where wounded; stem equal or nearly so, solid, slightly reticulate at the top, very minutely dotted, sometimes obscurely squamulose at the top, grayish or pallid; spores rusty brown or cinnamon brown, oblong or subfusiform, .0004–.0005 of an inch long, .0002–.00024 broad.

Pileus 2–4 inches broad; stem 2–3 inches long, 4–6 lines thick. Shaded sandy soil. Menands, Albany co. August.

The surface of the pileus is rendered uneven by coarse shallow depressions. The species belongs to the section Versipelles. The dots on the stem are nearly like those on the stem of Boletus chromapes Frost.

Caryospora cariosa Fairm.

In cavities of old beech wood. Lyndonville, Orleans co. C. E. Fairman.

Collybia campanella n. sp.

Pileus thin, conic or campanulate with a papilla at the apex, covered with coarse appressed or deflexed strigose hairs, dark tawny; lamellae ascending, moderately close, whitish; stem firm, equal, inserted, floccose hairy, colored like the pileus; spores not seen.

Pileus 3–4 lines broad; stem 9–12 lines long, .5 of a line thick. Dead and dry branches of arbor vitae, Thuja occidentalis. Horicon, Warren co. July.

This species is related to Collybia stipitaria from which it is readily distinguished by its persistently conic or campanulate pileus and its uniformly dark tawny color of both pileus and stem. The hairy tufts of the stem are pointed and project at right angles from the stem.

Collybia lacerata Lasch.

Dry soil among grasses and bayberry bushes. Fishers island, Suffolk co. October. C. C. Hanmer. In these specimens the expanded pileus is umbonate and the umbo is darker colored than the rest. The specimens agree well with the figure of the species as given in Cooke's *Illustrations of British Fungi*. The spores in our specimens are broadly elliptic or subglobose and .00024–.0003 of an inch long.

Cortinarius intrusus Pk.

Carnation beds in greenhouses. Highland Falls, Orange co. January. Ernest Palmer. Communicated by G. F. Atkinson. The species was described from specimens found growing in mushroom beds in conservatories in Massachusetts and New Jersey and communicated by R. Macadam and C. McIlvaine.

Cortinarius validipes n. sp.

Pileus fleshy, thick, convex becoming nearly plane, dry, squamulose or floccose squamulose, ochraceous, flesh white tinged with yellow next the lamellae, taste mild; lamellae thin, narrow, close, adnate or decurrent with a tooth, yellowish white becoming cinnamon; stem stout, firm, solid, fibrous, striate at the top by the decurrent teeth of the lamellae, subannulate from the adherent remains of the webby veil, yellowish white, whitish within; spores subelliptic, .0003–.0004 of an inch long, .0002–.00024 broad.

Pileus 3–6 inches broad; stem 4–5 inches long, 1–2 inches thick. Coopers Plains, Steuben co. September.

A cluster of six plants was found growing in a small excavation near a farmhouse. The weather had been unusually warm and dry for several weeks, but a soaking rain two days before and a thunder shower one day later seem to have been favorable to the development of this large fine mushroom. It belongs to the section Dermocybe.

Crataegus arcana Beadle

Moores Mills, Dutchess co. May and October. W. W. Eggleston.

Crataegus bissellii Sarg.

Rocky pasture, near Staatsburg, Dutchess co. May and September. Our plants differ from the typical form of the species only in having stamens 5–8 and anthers pale pink soon fading to white.

Crataegus cognata Sarg.

Colemans Station, Dutchess co. and Dykemans, Putnam co. May and September. Mr Eggleston had previously found it in the latter locality.

Crataegus deltoides Ashe

Moores Mills. May and October. W. W. Eggleston. The broadly ovate or deltoid leaves constitute a prominent feature of this species and are suggestive of the specific name.

Crataegus habereri n. sp. Sarg.

Leaves broadly ovate, acute, rounded, subtruncate or abruptly cordate at the wide entire or glandular base, finely doubly serrate above, with straight glandular teeth, and divided usually only above the middle into four or five pairs of small acuminate spreading lobes, nearly half grown when the flowers open about the middle of May and then membranaceous, light yellow green and roughened above by short white hairs and pale and glabrous below, and at maturity thin, dark yellow green and scabrate on the upper surface, light yellow green on the lower surface, 4.5–6.5 cm long and nearly as wide; with slender midribs, and their primary veins extending obliquely to the points of the lobes; petioles slender, slightly wing-margined at the apex, at first slightly villose, soon becoming glabrous, sparingly glandular while young, 2.5–3.5 cm in length; leaves on vigorous shoots truncate or rounded at the base, more coarsely serrate and more deeply lobed, often 7–8 cm long and 6–7 cm wide. Flowers 1.4–1.5 cm in diameter, on slender slightly hairy pedicels, in broad 5–8-flowered corymbs; calyx tube narrowly obconic, glabrous, or slightly hairy near the base, the lobes slender, acuminate, glandular serrate, glabrous on the outer, sparingly villose on the inner surface, reflexed after anthesis; stamens 10; anthers dark rose color; styles 3–5, surrounded at the base by a narrow ring of pale tomentum. Fruit ripening from the first to the middle of September, on glabrous reddish pedicels, in few-fruited drooping clusters, oval to obovate, crimson, lustrous, marked by large pale dots; calyx prominent, with a deep wide cavity, and incurved horizontal or recurved lobes dark red above toward the base and slightly hairy on the upper surface, their tips often deciduous from the ripe fruit; flesh thin, dark yellow, soft and succulent; nutlets 3–5, acute at the ends, slightly ridged and irregularly grooved on the back, 7–8 mm long and about 5 mm wide.

A shrub 3–5 m high, with small stems, wide spreading flexuous

branches, and slender slightly zigzag glabrous branchlets, light orange green when they first appear, becoming light chestnut-brown, lustrous and marked by pale lenticels in their first season, and dull reddish brown the following year, and armed with slender straight or slightly curved chestnut-brown spines 2.5–3 cm long.

Rocky pastures and margins of woods; New Hartford, Oneida co. J. V. Haberer (# 2410, type), May 20 and September 28, 1903; C. H. Peck, September 11, 1906.

This species, remarkable in its broad slightly lobed leaves and early ripening fruit, is named for its discoverer, Joseph Valentine Haberer M. D., an enthusiastic student of the flora of Herkimer, Oneida and Madison counties, the founder of the Asa Gray Botanical Club of Utica in 1886 and from that time to the present its president.

Crataegus noveboracensis n. sp. Sarg.

Leaves ovate, acuminate, abruptly concave cuneate at the entire base, finely doubly serrate above, with straight glandular teeth, and deeply divided into five or six pairs of narrow acuminate spreading lobes, more than half grown when the flowers open at the end of May and then thin, yellow green and covered above by short soft white hairs and paler and glabrous below, and at maturity thin but firm in texture, dark yellow green and lustrous on the upper surface and pale yellow green on the lower surface, 4.5–6.5 cm long and 4–5 cm wide, with slender yellow midribs, and thin primary veins arching obliquely to the points of the lobes; petioles slender, slightly wing-margined at the apex, villose on the upper side while young, becoming glabrous, sparingly glandular, 1–2 cm in length; leaves on vigorous shoots thicker, sometimes rounded or subtruncate at the broad base, more coarsely serrate and more deeply lobed, often 7–8 cm long and 6–7 cm wide, with stouter broadly winged petioles. Flowers 1.2–1.4 cm in diameter, on slender slightly villose pedicels, in usually 7–11-flowered lax corymbs; calyx tube narrowly obconic, coated especially near the base with long scattered white hairs, the lobes gradually narrowed, slender, acuminate, glandular serrate, glabrous on the outer, villose on the inner surface, reflexed after anthesis; stamens 15–20; anthers pale yellow; styles 4 or 5. Fruit ripening the middle of September, on slightly hairy reddish pedicels, in usually 5–7-fruited drooping clusters, subglobose to short oblong, full and rounded at the ends, crimson, lustrous, marked by large pale dots, about 1 cm in diameter; flesh thin, yellow, dry and mealy; nutlets 4 or 5, narrowed and rounded at the ends, slightly

ridged on the back, with a low slightly grooved ridge, 5.5–6 mm long and 4–5 mm wide.

A shrub 3–4 m high, with numerous small stems, ascending or suberect branches and slender nearly straight glabrous branchlets dark orange green when they first appear, becoming light chestnut-brown, lustrous and marked by pale lenticels in their first season and light gray brown the following year, and armed with numerous slender straight or slightly curved light chestnut-brown shining spines 4–5 cm long.

Sandy or rocky soil; Essex co. Common. North Elba, C. H. Peck (# 40, type), May 27, July 22 and September 14, 1903; C. H. Peck (40), Keene, May 31 and September 16, 1903.

Crataegus scabrida Sarg.

Hilly and rocky pastures. West Albany, Albany co., C. H. Peck; New Hartford, Oneida co., J. V. Haberer. May and September. This is a large shrub or small tree which occurs in several places about Albany. It also occurs in Petersburg, Rensselaer co. Its fruit is edible.

Crataegus tenella Ashe

Hilly and rocky pastures. Colemans Station and Moores Mills, Dutchess co.; Dykemans, Putnam co. May, September and October. W. W. Eggleston.

Cynoglossum boreale Fern.

West Fort Ann, Washington co. June. S. H. Burnham.

Didymium clavus (A. & S.) Rabenh.

Dead herbaceous stems. Grove Springs near Lake Keuka. July. C. E. Fairman. These specimens differ from typical forms in having a slightly smaller peridium.

Dryopteris pittsfordensis Slosson

Springville, Richmond co. May. Philip Dowell. Solway, Onondaga co. R. C. Benedict.

Entoloma minus n. sp.

Pileus thin, subconic or hemispheric, becoming broadly convex, glabrous, grayish brown, darker in the center; lamellae thin, close, ascending at first, sinuate behind, whitish becoming flesh color;

stem slender, hollow, white; spores subglobose, angular, .0003–.0004 of an inch in diameter.

Pileus 8–12 lines broad; stem 1–1.5 inches long, about 1 line thick. Ground in woods. East Schaghticoke, Rensselaer co. August.

Flammula expansa n. sp.

Pileus thin, broadly convex or nearly plane, glabrous or sometimes with appressed spotlike scales in the center, subochraceous. flesh white, taste mild; lamellae thin, narrow, close, yellow, changing to brown where wounded; stem short, equal, solid, brownish without, yellow within; spores broadly elliptic, .0003 of an inch long, .00024 broad.

Pileus 1–3 inches broad; stem about 1 inch long, 2–3 lines thick. Decaying wood of red maple, Acer rubrum. Helderbergs, Albany co. July. S. H. Burnham. East Schaghticoke, Rensselaer co. August.

Gaura coccinea Pursh

Near Rochester. August. Introduced from the west. M. S. Baxter and V. Dewing.

Hydnum coriaceo-membranaceum Schw.

Ground. Lake Pleasant, Hamilton co.

Hydnum luteopallidum Schw.

Decorticated wood and bark of some deciduous tree, apparently butternut, Juglans cinerea. Lyndonville, Orleans co. July. L. J. Muchmore. The type specimens of Schweinitz were found on grapevines. In ours the fungus is resupinate, adnate, with a very thin subiculum, smoky yellow or brownish, whitish or pale yellow on the young margin; the teeth are scarcely half a line long, scattered or crowded, sometimes confluent at the base and subfasciculate, colored like the subiculum but white fimbriate at the tips; spores subglobose, colored, verrucose, .00016–.0002 of an inch broad.

Hygrophorus burnhami n. sp.

Ground. West Fort Ann, Washington co. October. The description of this species may be found in the chapter on New York Species of Hygrophorus.

Hygrophorus luridus B. & C.

Among mosses and fallen leaves in woods. Sand Lake, Rensselaer co. August.

Hypocrea pallida E. & E.

On some resupinate polyporoid fungus on oak branches. Lake Minnewaska, Ulster co. August.

Inocybe pallidipes E. & E.

Dead wood and decaying vegetable matter, near Friends lake, Warren co. July.

The white stem and brown umbonate pileus are prominent and notable characters of this species. Wood inhabiting species of this genus are few. This one is related to Inocybe eutheloides Pk. but it is a stouter plant with a thicker, straighter stem which is white even in the dried state.

Lepiota asperula Atk.

Woods. Near Ithaca. August. G. F. Atkinson. Vaughns, Washington co. July. S. H. Burnham. This last is a form having a more slender stem and slightly darker pileus, but scarcely worthy of specific distinction.

Lepiota eriophora Pk.

Jamestown, Chautauqua co. August. G. E. Morris. This is distinguished from the preceding species by its smaller size, darker brown color, denser crowded scales of the pileus and specially by the copious brown tomentum of both pileus and stem, a character suggestive of the specific name. It has not yet been found in the eastern part of the State. Its range is apparently westward and southward.

Leptoglossum fumosum Pk.

Geoglossum luteum fumosum, State Mus. Rep't 43. 1890. p. 40.

Receptacle fleshy, stipitate, oblong, obtuse, terete or compressed and furrowed on one or both sides, glabrous, moist, hollow, distinct from the stem and sometimes with one or two decurrent lobes at the base, 3–6 lines long, 1.5–3 lines broad, smoky yellow; stem equal or nearly so, glabrous, hollow, about as long as the receptacle, slightly darker; asci subclavate or cylindric; spores oblong, biseriate, often slightly curved, hyaline, 2–4-nucleate, .0012–.0016 of an inch long, .00016–.0002 broad.

Mossy ground in woods. Sand Lake. August. This was formerly considered a mere variety of Leptoglossum luteum, but having found a group of good specimens showing well the distinctive characters of the species it seems worthy of specific rank.

Linum medium (Planch.) Britton

Hempstead Plains, Nassau co. July.

Lycoperdon excoriatum Lloyd

Warrensburg, Warren co. October. The specimens referred to this species were found growing about the roots of an old stump in a pasture. They are either scattered or gregarious in their mode of growth. The peridium is grayish brown and umbonate and has a cortex similar to that of Lycoperdon gemmatum Batsch but it usually separates and falls away in flakes or patches, a character suggestive of the specific name. Sometimes the larger spinules fall away separately, as in L. gemmatum, leaving a scar on the peridium and showing the close relationship between the two species.

Lycoperdon polytrichum Lloyd

Among hair cap mosses, Polytrichum juniperinum. Piseco, Hamilton co. August and September. Closely related to L. gemmatum, but differing in its peculiar habitat.

Lycoperdon serotinum Bon.

Decaying wood, old stumps and prostrate trunks of trees. September to November. Appearing like a late smooth form of Lycoperdon pyriforme Schaeff.

Marasmius phyllophilus n. sp.

Pileus membranaceous, convex or nearly plane, dry, strongly rugose striate or rugose sulcate, whitish, with a faint pinkish tinge when dry; lamellae narrow, distant, rounded behind, adnexed, white, the interspaces venose; stem tough, slender, equal, inserted, hollow, covered with a whitish downy or velvety pubescence; spores .0002–.00024 of an inch long, .00012–.00016 broad.

Pileus 4–8 lines broad; stem 10–15 lines long, about .5 of a line thick. Gregarious on fallen leaves in woods. Wading River, Suffolk co. August.

Closely related to M. insititius Fr. from which it is separated by the attachment of the lamellae to the stem and by the white color and pubescent coating of the stem. The spores also are larger than the dimensions of the spores of that species.

Mycena albogrisea n. sp.

Pileus thin, submembranaceous, ovate or subcampanulate, obtuse, glabrous, sulcate striate, grayish white; lamellae rather thick, broad, distant, adnate, colored like the pileus; stem slender, glabrous, hollow, paler than the pileus, with a whitish strigose villosity at the base; spores .0003 of an inch long, .00016–.0002 broad.

Pileus 3–5 lines broad, nearly as long; stem 1–2 inches long, about half a line thick.

Attached to fallen leaves of coniferous trees. Bolton, Warren co. September. It belongs to the section Basipedes. In the dried specimens the pileus has assumed a slightly darker or smoky tint, but it still retains its sulcate striate character.

Nicandra physaloides Gaertn.

Gloversville, Fulton co. September. W. C. Cottrell. Introduced from Peru. The common name of its fruit is apple of Peru. In *Illustrated Flora of the Northern States and Canada* its name is given as Physalodes physalodes (L.) Britton, but the International Botanical Congress having decided against the use of double names, we have used the name given in Gray's *Manual*.

Omphalia pusillissima n. sp.

Pileus membranaceous, broadly convex or nearly plane, glabrous, umbilicate, slightly striate on the margin when dry, white; lamellae few, distant, decurrent, white; stem slender, filiform, flexuous, glabrous, white; spores subglobose or broadly elliptic, .0002–.00024 of an inch long, .00016–.0002 broad.

Pileus 1–2 lines broad; stem 3–5 lines long. On humus and decaying twigs under pine trees. Delmar, Albany co. August.

This is one of the smallest species of Omphalia known to me. The lamellae are very narrow, sometimes branched and sometimes absent. It is a smaller mushroom than Omphalia integrella, and differs from it in its umbilicate pileus. The stem is hollow but the cavity is minute.

Ohleria modesta Fckl.

On carious wood of beech. Lyndonville, Orleans co. March. C. E. Fairman.

Panicum deminutivum n. sp.

Culms 4–10 inches tall, slender, erect, branched, slightly hairy near the base; branches 3–6, short, suberect, each terminating in a

panicle, occasionally bearing one or two branchlets; radical leaves lanceolate, sparingly villose, 3–6 lines long, cauline leaves narrowly lanceolate or linear, acuminate, 6–12 lines long, 1–1.25 lines broad, minutely pubescent beneath, glabrous above, or one or two lower ones sometimes with a few long scattered hairs, the sheaths mostly shorter than the internodes and minutely pubescent, stipules a tuft of slender bristlelike hairs .5–1 line long; panicles ovate in outline, 6–12 lines long, the branches and pedicels glabrous, spikelets subglobose or oval, less than .5 of a line long, the first scale minute, glabrous or nearly so, second and third scales nearly equal in length, minutely pubescent, the second commonly purplish.

Moist or wet muddy soil. Shore of Little pond about 2.5 miles south of Wading River, Suffolk co. August.

This diminutive panic grass has smaller spikelets than any species I find described. In most of its characters it approaches closely to Panicum psammophilum Nash from which I have separated it because of the smaller size of all its parts, its different mode of growth and different habitat. This is wet humus or decomposed vegetable matter which is apparently submerged in times of high water. The mode of growth is scattered, not cespitose, and the pubescence except at the base of the stem is so minute that it is scarcely visible to the naked eye. Unless carefully examined with a magnifying glass the plants would be considered glabrous.

Peckiella hymenii n. sp.

Subiculum white, overrunning the hymenium of the host plant and obliterating the lamellae, sometimes interrupted; perithecia minute, globose, semiimmersed in the subiculum, numerous, pale honey color becoming darker with age; asci linear, .009–.013 of an inch long, .0003–.0004 broad; spores monostichous, fusiform, acute at each end, hyaline, .0016–.0018 of an inch long, .00025–.0003 broad, oozing from the perithecia and forming irregular whitish masses upon them.

On the hymenium of Lactarius vellereus Fr. Wading River, Suffolk co. August.

The parasite in all the specimens seen, is limited to the hymenium of the host plant, the upper surface of the pileus and the stem remaining unchanged. The host plant also retains its acrid taste. The perithecia are so numerous that they give a general pallid hue to the parasite, though the subiculum itself is white. The emitted spores, adhering in minute masses, do not cover the surface with

a white pulverulence as the spores of the related Hypomyces lactifluorum (Schw.) Tul. do.

Peramium tessellatum (Lodd.) Rydb.

Woods. Floodwood, Franklin co. North Elba, Essex co. August. This may be separated from Peramium repens (L.) Salisb. by its spiral arrangement of the flowers of the spike.

Peridermium consimile A. & K.

Living leaves of spruce trees. Common in the swamps and on the mountains of the Adirondack region where it is associated with Peridermium decolorans Pk. from which it may be distinguished by its smaller spores.

Phyllosticta ampelopsidis E. & M.

Living leaves of woodbine, Ampelopsis quinquefolia. Wading River, Suffolk co. August.

Phyllosticta smilacis E. & E.

Living leaves of greenbrier, Smilax rotundifolia Mx. Wading River, Suffolk co. August.

Phyllosticta sphaeropsidea E. & E.

Living leaves of horse chestnut, Aesculus hippocastanum L. Port Henry, Essex co. September.

Pleurotus terrestris n. sp.

Pileus thin, broadly convex, even, glabrous, moist, whitish; lamellae thin, close, broad, slightly emarginate, adnexed, whitish; stem equal, even, curved, glabrous, solid, eccentric, whitish; spores white, globose, .00028–.00032 of an inch broad.

Pileus 2–3 inches broad; stem 2–3 inches long, 3–4 lines thick. Cespitose. On the ground in the margin of woods, West Fort Ann, Washington co. October. S. H. Burnham.

This species belongs to the section Eccentrici, group Tricholomatarii.

Polyporus galactinus Berk.

Trunks of apple trees. Delmar, Albany co. August. The fresh young specimens are white, but in drying they assume a pale straw color which in time becomes a dingy yellow. The spores in our examples are subglobose, .00016–.0002 of an inch broad.

Puccinia peckii (DeT.) Kell.

On hairy fruited sedge, Carex trichocarpa. North Greenbush. This is the teleutospore form. The aecidial form occurs on living leaves of evening primrose, Onagra biennis (L.) Scop. This form occurs in summer, the other in autumn.

Russula foetentula Pk.

The description of this species may be found in the chapter on "New York Species of Russula."

Russula modesta Pk.

For description see chapter on "New York Species of Russula."

Russula pectinatoides Pk.

The description of this species may be found in the chapter on "Edible Fungi."

Russula vesca Fr.

Woods. Bolton Landing, Warren co. August.

Scleroderma tenerum B. & C.

This is a small Scleroderma, scarcely attaining a diameter of 1 inch, and having a thin grayish or grayish yellow peridium spotted by very small appressed brownish scales. It is gregarious or sometimes cespitose in its mode of growth. It is not rare, but has been confused with another species both in this country and in Europe.

Septoria lycopersici Speg.

Living leaves of tomato. Menands. July. This parasitic fungus produces spots on the leaves and finally discolors the whole leaf and kills it. It is an injurious species.

Stecchèrinum adustulum Banker

On dead wood and sticks, Jamestown, Chautauqua co. G. E. Morris. East Schaghticoke, Rensselaer co. July. H. J. Banker. This species differs from the common Hydnum adustum Schw. or its equivalent Steccherinum adustum Banker, in its smaller size and its persistently white or whitish pileus and spines or teeth. Its spores are also a little shorter than in that species.

Stemonitis smithii Macb.

Decaying wood. Lyndonville, Orleans co. July. L. J. Muchmore.

Tricholoma hirtellum n. sp.

On or about pine stumps. Wading River, Suffolk co. August. The description of this species may be found in the chapter on "Edible Fungi."

Viola incognita Brainerd

Damp or moist ground. Little Falls. Mrs M. S. DeCoster. Sand Lake, Rensselaer co. May.

NEW EXTRALIMITAL SPECIES OF FUNGI

Phallogaster whitei

Peridium subglobose, 4–5 lines broad, abruptly contracted below into a cylindric stem about 4 lines long and 1 line thick, stellately or radiately rupturing when mature, the rays recurved; glebe masses greenish, becoming black in drying, separated from each other by a white slightly lobed columella, the lobes not reaching the inner surface of the peridium; spores minute, oblong, .00016–.0002 of an inch long.

Much decayed wood. Storrs, Ct. July. E. A. White. Closely allied to Phallogaster saccatus Morg. but distinct in its smaller size, differently shaped peridium, different mode of rupture, more distinct cylindric stem and different internal structure. Like that species it has an abundance of white branching mycelial strands. It is dedicated to its discoverer.

Hymenogaster anomalus

Peridium thin, subglobose, 9–12 lines in diameter, glabrous, slightly lacunose, often with a rootlike strand of mycelium at the base, whitish, sometimes tinged with red above, white and cellular within, the cells empty, .5–1 line in diameter, sterile base obsolete or nearly so, odor slight, not disagreeable; spores globose or broadly elliptic, even, hyaline, uninucleate, .0004–.00055 of an inch long, .00035–.0005 broad.

Near Washington, D. C. August and September. T. E. Wilcox. This species is most closely related to Hymenogaster thwaitesii B. & Br. by its subglobose spores, but it may be separated by its white substance, its smoother colorless spores and

its cordlike strand of mycelium. This last character is unusual in this genus and suggestive of the specific name.

Leptonia transformata

Pileus thin, submembranaceous, slightly convex or nearly plane, often umbilicate, silky tomentose, dry or slightly moist in wet weather, striatulate on the margin which is at first incurved, sometimes becoming wavy or split when old, white, flesh white, taste farinaceous; lamellae sinuate, adnexed, close, unequal, ventricose, white becoming pink; stem long, slender, straight or flexuose, equal or slightly narrowed upward, pruinose at the top, glabrous and shining below, subcartilaginous, stuffed or hollow, white with a white mycelium at the base; spores flesh colored, angular, uninucleate, .0004–.0005 of an inch long, .0003–.00035 broad.

Pileus 5–10 lines broad; stem 1–2 inches long, .5–1 line thick. Bushy places. Falmouth, Mass. July. S. Davis. Both pileus and stem become blackish or blackish brown in drying and the pileus becomes deeply umbilicate and strongly striate from the margin to the umbilicus. These changes give the dried plant an appearance quite unlike that of the fresh one.

Hygrophorus ruber

Pileus thin, conic, commonly unexpanded, acute or subobtuse, cuspidate or narrowly umbonate, very viscid or glutinous, bright red, not turning black in drying; lamellae narrow, ascending, adnexed, subdistant, yellow or yellowish brown; stem equal, viscid, hollow, colored like the pileus; spores subelliptic, .00024–.0003 of an inch long, .00016–.0002 broad.

Pileus .5–2 inches broad; stem scarcely 1 inch long, 1 line thick. Among mosses in wooded swamps. Ellis, Stow, Cohasset, Mass. September. G. E. Morris.

Distinct from H. conicus in its usually smaller size, more viscid pileus, bright red stem and persistent unchanging color in drying.

Hygrophorus serotinus

Pileus fleshy but thin, convex or nearly plane, often with the thin margin curved upward, glabrous or with a few obscure innate fibrils, reddish in the center, whitish on the margin, flesh white, taste mild; lamellae thin, subdistant, adnate or decurrent, white, the interspaces slightly venose; stem equal, stuffed or hollow, glabrous, whitish; spores white, elliptic, .0003 of an inch long, .0002 broad.

Pileus 8–15 lines broad; stem about 1 inch long, 1.5–2.5 lines thick.

Gregarious or cespitose in woods of oak and pine. Shore of Hammond pond near Boston, Mass. November. Mrs E. B. Blackford. This species is similar in size and color to Hygrophorus queletii Bres. but that species is described as having the margin of the pileus viscid when young and adorned with white flocci, the center of the pileus covered or spotted with reddish squamules or flocci and at length rimose areolate, the lamellae tinged with citrine yellow, the stem solid and furfuraceous or squamulose and the habitat is said to be larch woods only. None of these characters is applicable to our plant. It also resembles H. subrufescens Pk. in size and color but it differs from it in its more glabrous pileus with paler margin, its white flesh, stuffed or hollow stem and later time of appearance. This last character is suggestive of the name given to the species.

Xylaria polymorpha combinans n. var.

Club subglobose, often compressed and irregular, cespitose at the top of a common subterranean stem or of two stems united at the top; perithecia and spore character as in the species.

Growing from roots of a dead maple tree. Bridgeport, Ct. November. P. W. Graff. The subterranean stem is about 2.5 inches long, the clubs 1–1.5 broad. The clubs appeared as if resting on the ground. The subglobose shape of the club or stroma is characteristic of X. polymorpha hypoxylea Nits. and the cespitose mode of growth, of X. polymorpha spathulata Pers. This combination of characters of two varieties in one is suggestive of the varietal name here given.

REMARKS AND OBSERVATIONS

Agastache scrophulariaefolia (Willd.) Kuntze

This is a very variable species. A peculiar form occurs near Port Jefferson, in which the leaves are abruptly acuminate or cuspidate and the upper ones are entire or nearly so. The flower spikes are more narrow than usual and are sometimes interrupted toward the base.

Boletus nigrellus Pk.

A form of this extremely rare species was found in Sand Lake in which the pileus is yellowish or greenish yellow when fresh, and

its flesh, as well as the tubes and stem, slowly changes to a dingy flesh color and then to black or blackish where wounded, as in the type.

Castanea dentata (Marsh.) Borkh.

There is a chestnut tree near Freehold, Greene co., in which the involucre of the fruit is rudimentary or abortive. It consists of a mere shallow cup or rim which surrounds the base of the fruit. The tree is known to the inhabitants of the place as the burless chestnut. It blossomed freely the past summer but failed to develop fruit. It is said that the boys are so eager for the nuts that the owner of the tree realizes but small returns from it. As it is the only tree of its kind known to us it would seem desirable that it should be perpetuated either by planting its seeds or grafting scions of it on other chestnut trees.

Catastoma circumscissum (B. & C.) Morg.

This curious little puffball which ruptures at the base when mature, as indicated by the generic name, is more plentiful in more western regions. It has been found in two localities in our State, one in St Lawrence county, the other in Essex county.

Chrysomyxa pyrolae (DC.) Rostr.

As indicated by the specific name, this species usually inhabits the living leaves of various kinds of Pyrola, but the uredo spores were discovered the past season near Friends lake, inhabiting living leaves of Moneses uniflora (L.) Gray. July.

Clavaria bicolor Pk.

This name, being antedated by Clavaria bicolor Mass. was changed in *Syllog.* 17, page 196 to Clavaria peckii Sacc. & D. Sacc. This name having previously been used in *Sylloge* 9, page 249, was not available in this case. Therefore the name Clavaria vestitipes is here substituted for Clavaria bicolor in N. Y. State Museum bulletin 54, page 954.

Craterellus cantharellus (Schw.) Fr.

A form of this mushroom occurred plentifully the past season near Menands. The hymenium was distinctly marked by branched and anastomosing folds or narrow blunt edged lamellae, so that the plants might easily be mistaken for the common yellow chantarelle.

In the dried specimens the folds have disappeared from the hymenium near the stem but they are very distinct toward the margin. In other respects these mushrooms maintain the characters of the species. We propose for them the name Craterellus cantharellus intermedius n. var. The hymenium is intermediate in character between that of Cantharellus and Craterellus.

Dryopteris simulata Dav.

Fine specimens of this delicate fern were found near "Merrell Avenue," Richmond co. by Mr P. Dowell and contributed by him to the State herbarium.

Eleocharis intermedia habereri Fern.

Sandy shore of Oneida lake at Lewis point, Madison co. August. J. V. Haberer. In this variety the bristles are rudimentary or entirely wanting.

Fusarium sclerodermatis Pk.

This name is antedated by Fusarium sclerodermatis Oud. The New York fungus has the same habitat as the other and is so closely related to it that, in our opinion, it is only a less fully developed form of it.

Inocybe calamistrata Fr.

A form of this species sometimes occurs in which the usual dingy blue tint at the base of the stem is wanting. Such specimens were collected near Friends lake in July. They were growing with the normal form.

Irpex canescens Fr.

Fine specimens of this species were found in woods near Wading River. They were growing on dead branches of an apple tree, and developed on the underside of the branches. On branches less than an inch thick, a free margin projected 3 or 4 lines on each side. The hymenium of these margins had the appearance of the hymenium of some Lenzites, the plates being lamellalike and running at right angles to the axis of the branch and parallel to each other, occasionally branching or anastomosing.

Lactarius pergamenus Fr.

This mushroom seems to intergrade with Lactarius piperatus Fr. Specimens sometimes occur that might with almost equal propriety be referred to either species. But specimens were found

near Wading River in which the prominent distinguishing characters of the species were so well expressed that the identity of the species could be easily recognized. The thin, narrow and very crowded lamellae and the thin and flexible pileus were satisfactorily shown.

Lobelia dortmanna L.

In Gray's *Manual* the water lobelia is described as being 5–12 inches high; in Britton and Brown's *Illustrated Flora*, 6-18 inches. Specimens of this plant were collected in Friends lake that are 30–35 inches tall. They grew in deep water which is evidently one factor in determining the length of the stem.

Lycoperdon pedicellatum Pk.

On account of the permanently pedicellate spores of this very distinct puffball the species has been transferred from the genus Lycoperdon to Bovistella and bears the name Bovistella pedicellatum (Pk.) Lloyd.

Panus fulvidus Bres.

So far as can be ascertained from the descriptions of this species of mushroom and Lentinus sulcatus Berk. they are specifically the same. The uneven or denticulate edge of the lamellae of L. sulcatus is not mentioned in the description of P. fulvidus, but in the other characters there appears to be complete agreement. The specimens which in State Museum bulletin 105, page 26 are referred to P. fulvidus have the eroded or denticulate edge of the lamellae ascribed to Lentinus sulcatus and as this species antedates Panus fulvidus our specimens should take the name Lentinus sulcatus Berk. This species was founded on specimens collected in Ohio.

Paxillus panuoides Fr.

A singular form of this species was found at Glens Falls by Dr H. von Schrenk growing on pulp paper that had been stored for a considerable time in an inclosure where there was not much light. Both habitat and place were unusual and evidently had a modifying influence on the character of the specimens. Some of them were 4 inches long, including the narrowed stemlike base, and 2 or 3 inches broad. They were nearly white when fresh but in drying they gradually assumed a yellowish tint approaching the normal

color of the species. Smaller specimens were found growing near these but in a more exposed place. These had the usual color of the species.

Peziza (Mollisia) typhae Pk.

This name is antedated by Peziza (Mollisia) typhae Cke. Though bearing the same name the two fungi appear to be quite distinct. In the New York species the cups are superficial and the disk is much paler than in the other and the spores are much smaller. We therefore substitute the name Mollisia pallidior for Peziza (Mollisia) typhaė Pk. in New York State Museum Report 32, page 47.

Physarum lateritium (B. & R.) Rost.

Bark in woods. Lyndonville, Orleans co. Autumn. Scarce. C. E. Fairman. The Lyndonville specimens differ from the typical form in having the lime granules of the peridium and the nodules of the capillitium yellow instead of red.

Polystichum acrostichoides incisum (Gr.) Under.

Pound Ridge, Westchester co. July. Mrs E. S. Tomlinson The specimen is a very broad one, the frond being nearly 6 inches broad in its widest part. The fruiting pinnae are not abruptly reduced in size as in the ordinary form of the species.

Populus balsamifera L.

In the town of Sand Lake, Rensselaer co. there is an outlying and unusually southern station of this northern tree, the balsam poplar. The trees are few in number but they have existed there for many years. Those bearing pistillate aments predominate, but staminate aments are borne by at least one tree. The location is so far south of the general range of the species that late frosts often kill the early starting blossoms and prevent the development of fruit. Sometimes when this does not occur the crop of pollen seems to be insufficient for the general pollination of the pistillate blossoms. Last spring many pistillate aments were found with only three or four fruit pods developed, the others having prematurely fallen. The lack of proper pollination was probably the cause.

The leaves on the older and less vigorous branches are somewhat rhomboidal and pointed at both ends, but those on young and vigorous branches are more ovate and broadly rounded or even truncate at the base. Both kinds of leaves grow on different branches of

the same tree. The species is northern in its range and is common in the Adirondack region.

Sagina procumbens L.

Crevices of walls and pavements. Utica. September. This is an unusual location for the procumbent pearlwort. Its occurrence here was made known to me by Dr Haberer. It forms rather dense compact mats. In Paine's *Catalogue of Oneida County Plants* its habitat is given as "wet sandy banks and shores." It is recorded as "rare" but no definite station is mentioned.

Scirpus atrovirens pycnocephalus Fern.

Shore of Oneida lake at Lewis point, Madison co. August.

Scirpus cyperinus pelius Fern.

Open woods 3 miles south of Utica. August. J. V. Haberer. Near Frankfort, Herkimer co. September. C. H. Peck.

Trametes serialis Fr.

On pulp paper. Glens Falls. October. H. von Schrenk. The specimens are white throughout and therefore the growth of the present season. The usual habitat in the Adirondack region is dead wood of spruce.

Trillium erectum album Pursh

Near Syracuse. May. Mrs L. L. Goodrich. In the contributed specimen the petals are yellowish. This form has been unusually plentiful this year and might easily be considered as good a variety as the form with white petals.

Viola cucullata Ait.

A peculiar form of this species occurs in North Greenbush. In it the scapes are about as long as the leaves, the tips of the petals are white or whitish and also the basal angles of some of the leaves.

EDIBLE FUNGI

Tricholoma hirtellum n. sp.

HAIRY CAP TRICHOLOMA

PLATE 105, FIG. 1–5

Pileus fleshy, thin, convex, subumbonate, dry, hairy, pale brown, flesh white, taste mild; lamellae thin, narrow, close, slightly sinuate,

adnexed, minutely floccose on the edge, yellowish white or pallid; stem slender, equal, stuffed or hollow, with a very small cavity, fibrillose or subsquamulose, colored like or a little paler than the pileus; spores subglobose, .00024–.0003 of an inch long, .0002–.00024 broad.

The hairy cap tricholoma grows in tufts or singly on or about pine stumps in Wading River, Suffolk co. and occurs in August. It is a very rare species and has been found but once. It is related to Tricholoma albofimbriatum Trog., from which it is separated by its hairy cap, white flesh and less crowded gills not fimbriate on the margin. The hairs of the cap are often collected in minute tufts giving the cap an appearance similar to that of the brownish caps of the honey-colored armillaria, but unlike that species it never has a collar on the stem. The caps are 1–1.5 inches broad, the stem 2–3 inches long and 2–3 lines thick.

Tricholoma nudum (Bull.) Fr.

NAKED TRICHOLOMA

PLATE 104, FIG. 1–9

Pileus thin, broadly convex, nearly plane or slightly depressed in the center, obtuse or occasionally slightly umbonate, incurved on the thin naked margin when young, pale violaceous or lavender, fading with age and the escape of moisture to a pale grayish brown, often slightly tinged with reddish or yellowish hues, flesh of the young plant tinged with the color of the pileus, becoming white with age, taste mild; lamellae thin, narrow, close, slightly sinuate, adnate or decurrent, colored like the pileus when young, becoming whitish with age; stem firm, equal, fibrous, stuffed or hollow, colored like the pileus; spores pale flesh color in mass, elliptic, .00024–.0003 of an inch long, .00012–.00016 broad.

The naked tricholoma is a rare species with us. The specimens tested and figured on plate 104 were collected in Electric park, Columbia co., October 29, by Mr S. H. Burnham. The plants were found growing in flower beds, either singly or in clusters, and when young and fresh they are throughout of a beautiful violet color approaching lavender, but this color fades and changes with age and with the escape of moisture and the cap becomes a pale pinkish gray or dingy reddish, the stem and gills also changing in a similar manner. The cap is generally obtuse but sometimes umbonate. The margin is very thin and when young is incurved and sometimes

striatulate, the obscure striations being the shadowy lines of the gills showing through the membranous and almost translucent substance of the margin. In drying, the excessive moisture escapes from the center of the cap first. The margin is naked even in young plants and in this character the species differs from its near relative, the masked tricholoma. It is also smaller than that species and more highly colored when young. The naked margin is probably the character which suggested the name of the species. The typical form of the species is described as having a stuffed stem. In our plants the stem is sometimes clearly hollow. An acid odor has been ascribed to the species but no distinct odor was perceptible in our specimens. European mycologists do not appear to have given very definitely the color of the spores of this species. Professor Fries describes the spores of the species referred by him to Paxillus, tribe Lepista, as sordid, and W. G. Smith, who raised this tribe to generic rank and referred both Tricholoma nudum and T. personatum to it, says the spores are dirty white. In our plant the spores are pale flesh color and indicate a close relationship between this species and those of the pink spored series, specially those in the genus Clitopilus. But the close connection between this species and Tricholoma personatum persuades us at present to let the species remain where it has so long stood notwithstanding the peculiar spore color. The cap in our specimens is 1–3 inches broad, the stem 1–2 inches long and 2–4 lines thick.

Stevenson says of the European plant, "Not recommended as edible." Gillet says "very good" and "very delicate" but rarely used. In our trial of it we found it agreeable in flavor, digestible and harmless and have no hesitation in placing it among the edible species. Its worst defect is its scarcity.

Clitocybe amethystina (Bolt.)

AMETHYST CLITOCYBE

PLATE 106, FIG. 1–6

Pileus at first hemispheric, becoming broadly convex or nearly plane, hygrophanous, often obscurely striate on the margin when young and moist, depressed in the center or frequently umbilicate, often irregular, violaceous when moist, grayish or grayish white when dry; lamellae rather thick, subdistant, violaceous, adnate or slightly decurrent; stem slender, rigid, straight or flexuose, stuffed,

becoming hollow, paler than the moist pileus; spores globose, verrucose, .0003–.0004 of an inch broad.

The amethyst clitocybe is a small species, gregarious in its mode of growth and slightly tough. European mycologists have generally considered it as a mere form or at most a variety of Clitocybe laccata (Scop.) Fr. Berkeley and Broome instituted a new genus, Laccaria, for the reception of C. laccata and allied species with tough substance, hymenophorum confluent with the stem, and thick gills powdered with white globose spores. They remark that the amethyst colored form usually referred to Agaricus laccatus is probably distinct. Their genus has not yet been generally accepted but there is good ground for its establishment and it probably will be recognized in due time. Their remark concerning the amethyst-colored form of C. laccata appears to us to be worthy of acceptance and it is therefore accepted here as a distinct species. It is easily recognizable both in its fresh and dried state from the paler and more common form usually referred to C. laccata. It is very constant in its characters and no intermediate forms occur to connect them. It is quite as good as an edible mushroom. In drying, the gills retain their violaceous color longer than the cap.

Clitocybe ochropurpurea Berk.

PURPLISH OCHER CLITOCYBE

PLATE 106, FIG. 7–11

Pileus subhemispheric, becoming convex with a decurved margin or nearly plane and slightly centrally depressed, fleshy, tough, compact, hygrophanous, purplish brown when moist, grayish or pale alutaceous when dry, unpolished; lamellae thick, distant, broad, narrower outwardly, adnate or decurrent, purple; stem variable, short or long, equal, or sometimes thicker in the middle, sometimes at each end, fibrous, solid, colored like or paler than the pileus; spores globose, white, verrucose, .0003–.0004 of an inch broad.

The purplish ocher clitocybe is related to such species as the laccate clitocybe, C. laccata, and the amethyst clitocybe, C. amethystina. From both it is easily separated by its purple gills and larger size. It is found in wet weather from July to September. It grows in open grassy places and is sometimes quite irregular in shape. Its cap is often 3–4 inches broad and its

stem 4–6 lines thick. As an edible species it is rather tough but its flavor is agreeable if well cooked and seasoned and it is harmless.

Should the proposed genus Laccaria be recognized the name of the present species would be Laccaria ochropurpurea (Berk.) and that of the preceding species would be Laccaria amethystina (Bolt.) Cke.

Russula compacta Frost

COMPACT RUSSULA

PLATE 109, FIG. 1–4

Pileus fleshy, compact, broadly convex, becoming centrally depressed or infundibuliform by the elevation of the margin, dry or slightly viscid after rain, unpolished, at first whitish slightly clouded with reddish buff, or rusty red with whitish margin, becoming entirely rusty red with age, flesh white, taste mild or slightly and tardily acrid; lamellae close, adnate or slightly rounded behind, unequal, some forked, white, changing to reddish brown where wounded and in drying; stem short, stout, firm, solid or sometimes cavernous, white, becoming stained where bruised; spores white, globose or subglobose, .0003–.00035 of an inch broad.

The compact russula is a large mushroom belonging to the Friesian section Compactae. It is allied to the European Russula mustelina Fr. from which it may be separated by its different color, which changes with age, and by its disagreeable odor in drying. The cap is usually 2–4 inches broad, but sometimes it attains a diameter of 6 inches. Its stem is short, equal, stout and firm, white when young but usually becoming colored like the cap. It is 2–2.5 inches long, 8–18 lines thick. It furnishes an abundance of agreeable food, the flesh being so thick and compact.

Russula earlei Pk.

EARLE RUSSULA

State Mus. Bul. 67, p. 24, pl. N, fig. 5–10.

The Earle russula is a very distinct and easily recognized species. No one of our other species has such distant gills combined with such small white spores. These characters in connection with its very viscid or glutinous and pale yellow or straw colored cap make it scarcely possible to confuse it with any other species. It has hitherto been found on Long Island only. It occurs in August.

Russula pectinatoides n. sp.

PECTENLIKE RUSSULA

PLATE 105, FIG. 6–10

Pileus thin, broadly convex becoming nearly plane or centrally depressed, viscid when moist, widely tuberculose striate on the margin, brownish or yellowish brown, sometimes darker in the center, flesh white, grayish white under the separable cuticle, taste mild or slightly acrid; lamellae thin, a few forked at the base, occasionally a short one, adnate, white becoming pallid; stem equal, spongy within, even, glabrous, white; spores whitish, subglobose, .00025–.0003 of an inch long.

Grassy ground in groves or pastures. The pectenlike russula is similar to Russula pectinata (Bull.) Fr. from which it differs in its mild or slightly acrid flavor, its even stem, in its flesh being grayish white under the cuticle and in its adnate gills. It is gregarious or scattered in its mode of growth and is not plentiful. It closely resembles Russula sororia Fr. in its general appearance, but may be separated from it by its milder taste.

Its cap is 1–3 inches broad; its stem is 1–2 inches long and 3–4 lines thick. It appears in July and August. It is edible but not very highly flavored.

Russula uncialis Pk.

INCH WIDE RUSSULA

PLATE 107, FIG. 7–12

Pileus thin, convex becoming expanded or centrally depressed, viscid when moist, glabrous or very minutely rivulose-granulose, red or pinkish red, the margin obscurely tuberculose striate, flesh white, taste mild; lamellae moderately close, narrowed toward the stem at which a few of them in some specimens are forked, adnate or slightly emarginate, white, the interspaces venose; stem equal, glabrous stuffed or spongy within, white or reddish; spores white, globose, rough, .0003–.00035 of an inch in diameter.

The inch wide russula belongs to the subgenus Fragiles, white spore group. It is about as large as Russula fragilis, but may be distinguished from it by its mild taste and less crowded gills. From similarly colored specimens of R. chameleontina it differs in its white spores and gills. The gills become pallid in drying.

Agaricus micromegethus Pk.

SMALL MUSHROOM

PLATE 107, FIG. 1–6

Agaricus pusillus Pk., N. Y. State Mus. Rep't 54, p. 152.

Pileus fleshy but thin, fragile, convex, becoming plane, sometimes slightly depressed in the center, dry, silky fibrillose or fibrillose-squamulose, grayish brown, darker or brown in the center, often with yellowish or ferruginous stains, flesh white or whitish, not changing color where wounded, taste and odor almond; lamellae thin, close, free, grayish, soon pinkish, finally brown; stem equal or slightly tapering upward, sometimes bulbous, stuffed or hollow, slightly fibrillose, white, the annulus slight, often evanescent; spores broadly elliptic or subglobose, .0002 of an inch long, .00016 broad.

The specimens from which this species was first described were smaller than others collected later. The caps in these now before us are 1–3 inches broad and the stems 1–2 inches long and 3–5 lines thick. The flesh is white and unchangeable when cut or wounded. It has a taste resembling that of almonds which has given origin to the local name "almond mushroom." One correspondent says that "it is the finest flavored mushroom he has ever tasted." Bruises of the cap and stem of the fresh plant sometimes assume a yellow color. The plants grow singly or in clusters. They appear from September to November, and have been found growing in both sandy and clayey soil, and in tan yards. The range is from Michigan to Massachusetts.

Boletus frostii Russell

FROST BOLETUS

PLATE 108, FIG. 1–5

Pileus convex, firm when young, becoming softer with age, glabrous, viscid, dark red becoming paler with age, flesh whitish, tinged with yellow next the tubes, taste slightly acrid; tubes concave in the young plant, becoming plane or convex, adnate, yellowish with their mouths colored like the pileus, changing to bluish green where wounded; stem equal or nearly so, solid, strongly reticulate, colored like the pileus, yellow within, often with reddish stains at the base; spores with a greenish hue when caught on white paper, subfusiform, .0005–.0006 of an inch long, .0002 broad.

The frost boletus is a very showy species. Its deep red cap and distinctly reticulate red stem are attractive to the eyes and a delight

to the mycologist. It occurs in our State on Long Island and so far as known is not found elsewhere within our limits. Its viscid cap is 2–4 inches broad and its stem about as long and 4–6 lines thick. It grows both in thin woods and in open places and occurs during July and August. According to the old rule, which pronounced all species of which the broken flesh assumed a blue color to be unfit for food and dangerous, this species should be rejected. But this rule must have its exceptions. I have eaten of this boletus without harm and one of my correspondents writes that he has eaten four caps of it at a meal and considers it an excellent species.

Boletus rugosiceps Pk.

RUGOSE CAP BOLETUS

State Mus. Bul. 94, p. 20, pl. Q, fig. 6–10.

The rugose cap boletus is well marked by its yellowish ochraceous cap which is irregularly uneven by unequal and variously shaped pits or depressions in its surface. It is sometimes slightly tinged with red or orange and occasionally embellished with small areolae formed by cracks in the surface. The surface is viscid and shining when moist and the flesh is white or whitish. The tubes are at first closed but they soon open, are minute, round and yellow, becoming darker with age. The stem is solid and firm in texture, often marked with elevated longitudinal lines or ridges and dotted with numerous points which are variable in color, being either pallid, brownish or yellowish. The cap is 1–3 inches broad, the stem 2–4 inches long and 4–8 lines thick. The plants grow in thin woods and may be found in August. They have been found on Long Island but not in other parts of the State. In preparing them for the table it is well to peel away the cuticle and the tubes and discard the stem.

NEW YORK SPECIES OF HYGROPHORUS

Hygrophorus Fr.

Hymenophorum continuous with the stem, descending unchanged into the trama; lamellae acute on the edge, clothed with a hymenium changeable into a waxy mass, not membranaceous; spores globose elliptic or ovoid, white.

Terrestrial putrescent fungi with a viscid or moist pileus.

The waxy character of the hymenium is the chief distinguishing character of the genus. The lamellae are usually thick, distant or subdistant, and their hymenial surfaces somewhat separable from

the trama. Many species with decurrent gills are similar in appearance to species of Clitocybe, but such species may generally be distinguished by their distant lamellae and their viscid pileus and stem. The genus was divided by Fries into three tribes or subgenera which have not yet been accepted as genera but they probably will be in due time. The following synoptic key indicates the prominent characters that may be employed in their separation.

KEY TO THE SUBGENERA

Stem solid or stuffed.....1
Stem hollow..... Hygrocybe
1 Pileus moist, not viscid.....Camarophyllus
1 Pileus and stem viscid.....Limacium

Limacium Fr.

Universal veil viscid with a partial floccose veil sometimes forming a ring or attached to the margin of the pileus; lamellae adnate or decurrent; stem clothed with squamules or more often scabrous punctate at the top (or sometimes glabrous).

In this subgenus the pileus and stem are normally viscid but in Hygrophorus purpurascens Fr. and H. capreolarius Kalchb. they soon become dry. The stem is usually solid or stuffed, but in H. eburneus Fr. and H. hypothejus Fr. it often becomes hollow. H. pudorinus Fr. is described as having no veil, but the pileus and stem are viscid. Perhaps the "velum nullum" has reference to the partial floccose veil only. There are several species in which the stem is neither squamulose nor scabrous punctate at the top. In other respects they agree with the description of this subgenus. They are H. fuligineus Frost, H. flavodiscus Frost, H. speciosus Pk., H. subviolaceus Pk., H. hypothejus Fr. and H. lividoalbus Fr. This might justify the formation of a new subgenus for their reception, but since Fries himself has placed several similar European species in his subgenus Limacium, thus practically recognizing this additional character, it has seemed better to extend the characters of the subgenus, as Fries has done in fact though not in words, than to found another subgenus on such a slight difference.

KEY TO THE SPECIES

Pileus white, or white with the center yellowish or brownish.....1
Pileus pinkish, violaceous or red or purple with paler margin.....7
Pileus livid white, cinereous or brown.....11
1 Margin of pileus with yellow floccose points.....chrysodon
1 Margin of the pileus naked.....2

2 Stem hollow when mature.....3
2 Stem solid or stuffed, not hollow when mature.....4
3 Lamellae white .....eburneus
3 Lamellae yellow or yellowish.....hypothejus
4 Lamellae becoming brownish with age or in drying.....5
4 Lamellae persistently white or whitish.....6
5 Pileus slightly virgate with innate fibrils.....virgatulus
5 Pileus not fibrillose.....laurae
6 Stem scabrous punctate at the top.....rubropunctus
6 Stem glabrous at the top.....flavodiscus
7 Pileus purple or with purple squamules in the center.....8
7 Pileus some other color.....9
8 Pileus uniformly colored.....capreolarius
8 Pileus with purple squamules in the center.....purpurascens
9 Stem scabrous punctate at the top.....pudorinus
9 Stem glabrous, naked at the top.....10
10 Pileus bright red, fading to yellow on the margin.....speciosus
10 Pileus pale violaceous.....subviolaceus
11 Stem naked at the top.....12
11 Stem not naked at the top.....13
12 Stem solid.....fuligineus
12 Stem stuffed. . . ..lividoalbus
13 Stem squamulose at the top.....limacinus
13 Stem white floccose at the top.....fuscoalbus

Hygrophorus chrysodon (Batsch) Fr.

GOLDEN TOOTH HYGROPHORUS

Pileus convex or nearly plane, viscid when moist, shining when dry, white with yellow particles or flocci on the margin and sometimes in the center also, flesh white; lamellae distant, decurrent, white, sometimes yellowish on the edge; stem equal or nearly so, stuffed, white with yellow floccose points at the top; spores elliptic, .0003–.00035 of an inch long, .00016–.0002 broad.

Pileus 1.5–3 inches broad; stem 1.5–2.5 inches long, 3–5 lines thick.

Woods and open places. Albany, Columbia and Ulster counties. Not common. September and October.

A beautiful mushroom easily known by the yellow ornamentation of the margin of the pileus, the upper part of the stem and sometimes the edge of the lamellae.

Hygrophorus eburneus (Bull.) Fr.

IVORY HYGROPHORUS

Pileus convex or nearly plane, viscid when moist, slightly pubescent on the margin when young, white, flesh white; lamellae distant,

decurrent, white; stem equal or narrowed at the base, straight or flexuous, stuffed or hollow, viscid, white with white points or squamules at the top; spores subelliptic, .00024–.0003 of an inch long, .0002–.00024 broad.

Pileus 1–2 inches broad; stem 1.5–3 inches long, 2–4 lines thick.

Thin woods and open places. Sometimes cespitose. Lake Mohonk, Ulster co. September and October. It may be distinguished from its near allies by its hollow stem. It is said to be edible but I have not tried it. The viscidity of the stem makes it difficult to pluck from its place of growth and unpleasant to handle.

Hygrophorus virgatulus Pk.

BLACK LINED HYGROPHORUS

State Mus. Rep't 26. 1874. p. 64.

Pileus convex or nearly plane, viscid when moist, minutely streaked with innate blackish fibrils, whitish with a brownish center, flesh white; lamellae distant, arcuate, decurrent, white becoming brownish in drying; stem equal or tapering downward, solid, viscid, white with a few small white floccose scales at the top; spores .0003–.00035 of an inch long, .00016–.0002 broad.

Pileus 1–2 inches broad; stem 2–3 inches long, 2–3 lines thick.

Woods. Rensselaer county. October. Very rare. The specimens here described were found in 1872 but no specimens of this species have since been found. The species is closely related to H. laurae from which it may be separated by its smaller size, more dingy color of the pileus with its innate fibrils and by its more soft floccose scales at the top of the stem.

Hygrophorus laurae Morg.

LAURA HYGROPHORUS

Jour. Cinn. Soc. Nat. Sci. 6. 1883. p. 180.

Pileus fleshy, convex, umbonate, becoming expanded and depressed, more or less irregular, glutinous, white with a reddish or brownish tinge, specially on the disk, flesh white; lamellae unequal, adnate or decurrent, distant, white; stem more or less curved or crooked, often tapering downward, solid, yellowish white, the apex scabrous with scaly points; spores elliptic, apiculate, .0003 of an inch long, .0002 broad.

Pileus 2–4 inches broad; stem 2–4 inches long, 3–6 lines thick.

Woods and open places. Common. August and September. Single, gregarious or cespitose.

Var. unicolor Pk. Pileus wholly white or only faintly tinged with yellow. Warren county. September. Edible. In this variety and in the typical form both pileus and lamellae become darker colored with age or in drying, but in the lamellae the change is more pronounced than in the pileus.

Var. decipiens Pk. Pileus thin, white with a dingy yellow or smoky brown spot in the center; lamellae subdistant, stem long, slender, white; pileus and stem not changing color with age or in drying, lamellae changing color slightly. Cespitose; borders of woods. Hamilton county. September. Edible.

More slender than the typical form and differing specially in the persistent colors of the pileus and lamellae. Closely related to the next following species.

(Hygrophorus rubropunctus n. nom.

RED DOTTED HYGROPHORUS

(Hygrophorus glutinosus Pk.)

State Mus. Bul. 54. 1902. p. 950.

Pileus fleshy, firm, convex, glutinous, white, sometimes tinged with yellow by the drying of the gluten, involute on the margin, flesh white; lamellae subdistant, adnate, white; stem equal, solid, white, floccose tomentose below the glutinous annulus, studded above with drops of moisture which in drying form reddish glandular dots; spores elliptic, .0003–.0004 of an inch long, .00[redacted].00024 broad.

Pileus 1–2 inches broad; stem 1–1.5 inches long, 3–4 lines thick.

Open places. Warren county. September. Rare. In the fresh plant the lower part of the stem appears to be coated with tomentum smeared with gluten, but in the dried plant the gluten assumes an orange-yellow or bright straw color and the tomentum disappears. The species differs from H. laurae Morg. in its white pileus, persistently white lamellae, reddish dots at the top of the stem and in the tomentum of the lower part of the stem. Agaricus glutinosus Bull., in its transfer to the genus Hygrophorus to which it belongs, was consigned to synonymy, therefore according to the rule "once a synonym always a synonym" it becomes necessary to change the name Hygrophorus glutinosus Pk. This has been done by substituting for it the name Hygro-

phorus rubropunctus which has reference to the red dots at the top of the stem.

Hygrophorus flavodiscus Frost

YELLOW DISKED HYGROPHORUS

State Mus. Rep't 35. 1884. p. 134; State Mus. Mem. 3, p. 145, pl. 50, fig. 1-6.

Pileus fleshy, convex or nearly plane, very viscid or glutinous, white, pale yellow or reddish yellow in the center, flesh white; lamellae adnate or decurrent, subdistant, white, sometimes with a slight flesh-colored tint; stem nearly equal, solid, very viscid or glutinous, white at the top, white or yellowish below; spores elliptic, .00025–.0003 of an inch long, .00016–.0002 broad.

Pileus 1–3 inches broad; stem 1–3 inches long, 3–6 lines thick.

Pine woods. Albany county. October. Rare. Edible. This is an excellent edible species, tender and agreeable in flavor. It is well to strip off the viscid pellicle with its adhering dirt and leaves before cooking. The species differs but slightly except in color from H. fuligineus Frost with which it sometimes grows.

Hygrophorus capreolarius Kalchb.

CAPREOLAR HYGROPHORUS

Pileus fleshy, convex becoming plane or centrally depressed, subviscid but soon dry, virgate with innate darker fibrils and punctate squamulose in the center, purplish red, flesh reddish; lamellae narrowed toward each end, distant, adnate or decurrent, purplish with a slight cinnamon tint; stem nearly equal, solid, striate or reticulate with obscure fibrils, purplish brown; spores .00024–.0003 of an inch long, .0002–.00024 broad.

Pileus 1–3 inches broad; stem 1–3 inches long, 3–6 lines thick.

Gregarious or cespitose. Woods, mostly under coniferous trees. Essex county. September.

This was published by Kalchbrenner as a variety of H. erubescens Fr. but in the *Sylloge* it is given as a distinct species and most mycologists recognize it as such at the present time. The spore dimensions given above are from spores of our American specimens.

Hygrophorus purpurascens (A. & S.) Fr.

PURPLISH HYGROPHORUS

Pileus fleshy, convex becoming plane, slightly viscid, soon dry, whitish, variegated in the center with purplish red spots or appressed

squamules; lamellae subdistant, adnate or slightly decurrent, whitish; stem equal, solid, white, roughened by purplish squamules, sometimes with slight traces of a veil near the top; spores .00024 of an inch long, .00016 broad.

Pileus 1.5–3 inches broad; stem 1–2 inches long, 3–6 lines thick.

Gregarious, under pine trees. Albany county. October. Very rare. Found but once. Our specimens differ slightly from the typical form, the pileus being fibrillose rather than squamulose and the lamellae are whitish, not purplish. There is a partial webby veil which forms a slight but mostly evanescent annulus. This species and H. capreolarius are less viscid than the other members of this subgenus here described. The spore dimensions are from American specimens.

Hygrophorus pudorinus Fr.

BLUSHING HYGROPHORUS

State Mus. Bul. 67, p. 41, pl. 83, fig. 1–6.

Pileus fleshy, firm, convex becoming nearly plane, glabrous, viscid when moist, pinkish buff or pale flesh color, flesh white, taste mild; lamellae distant, adnate or decurrent, white; stem equal or pointed at the base, solid, white or whitish, with white points at the top; spores elliptic, .0003–.0004 of an inch long, .00016–.0002 broad.

Pileus 2–4 inches broad; stem 2–5 inches long, 6–10 lines thick.

Gregarious or cespitose. Commonly under spruce or balsam fir trees. Essex county. September. Edible. This is a beautiful species, generally free from the attacks of insect larvae, attractive in appearance and of excellent flavor. It is a first-class edible mushroom. The plant referred to Hygrophorus queletii Bres. in State Museum Report 42, page 23 is now believed to be only a form of this species and it is therefore omitted.

Hygrophorus speciosus Pk.

SHOWY HYGROPHORUS

State Mus. Rep't 29, 1878; p. 43, pl. 2, fig. 1–5. State Mus. Mem. 3, p. 148, pl. 51, fig. 21–28.

Pileus ovate or subconic becoming broadly convex or nearly plane, often with a small blunt or acute umbo, glabrous, very viscid or glutinous, bright red or scarlet when young, or red in the center, yellow on the margin, sometimes fading and becoming wholly yellow, flesh white, pale yellow under the separable pellicle; lamellae dis-

tant, decurrent, white or slightly tinged with yellow; stem rather long, nearly equal, solid, viscid, sometimes slightly fibrillose, whitish or yellowish; spores elliptic, .0003 of an inch long, .0002 broad.

Pileus 1–2 inches broad; stem 2–4 inches long, 2–4 lines thick.

Gregarious. Under or near tamarack trees. Albany, Essex and Warren counties. September and October. Edible.

This is a beautiful mushroom but its bright colors fade with age and in drying. The bright red or scarlet usually persists longest in the center. Sometimes the umbo alone remains red. The species is closely related to the European H. aureus Arrh. from which it differs in its place of growth, its solid stem, the absence of any tawny hues and of any vestiges of an annulus. H. bresadolae Quel. and H. lucorum Kalchb. are also closely related European species from which our plant differs in its solid stem and the absence of any annulus. No red color is attributed in the descriptions, to either of the three species mentioned, but H. aureus is sometimes figured with a red center to the pileus.

Hygrophorus subviolaceus Pk.

VIOLET HYGROPHORUS

State Mus. Rep't 53. 1899. p. 842, pl. C, fig. 11–15.

Pileus firm, hemispheric, becoming convex, glabrous, viscid, violaceous when fresh and moist, paler or grayish when dry, flesh white; lamellae arcuate, decurrent, distant, pale violaceous; stem equal or tapering downward, solid, glabrous, white; spores subglobose or broadly elliptic, .00024–.0003 of an inch long, .0002–.00024 broad.

Pileus 1–1.5 inches broad; stem, 1–1.5 inches long, 2–4 lines thick.

Damp mucky ground in swamps. Meadowdale, Albany co. October.

This species has been found but once. It is evidently very rare. In drying the specimens become blackish or brown. It is related to H. lacmus Fr. but differs from it in its solid stem, in the color of the lamellae and in having no papilla or umbo on the pileus.

Hygrophorus fuligineus Frost

SOOTY HYGROPHORUS

State Mus. Mem. 3, p. 146, pl. 50, fig. 7–12.

Pileus convex or nearly plane, glabrous, very viscid or glutinous, grayish brown or fuliginous, often darker or almost black in the center; lamellae subdistant, adnate or decurrent, white; stem

equal, solid, viscid or glutinous, white or whitish; spores elliptic, .0003–.00035 of an inch long, .0002 broad.

Pileus 1–4 inches broad; stem 2–4 inches long, 4–8 lines thick.

Pine woods. Albany county. October and November. Edible. Often growing in company with H. flavodiscus and equally esteemed as an edible mushroom. Both occur late in the season. The stem is sometimes brownish at the base.

Hygrophorus limacinus (Scop.) Fr.

SLIMY HYGROPHORUS

Pileus fleshy, convex becoming nearly plane, glabrous, viscid, brownish or smoky brown in the center, paler on the margin; lamellae rather thin, subdistant, adnate or decurrent, grayish white; stem equal, firm, solid, viscid, fibrillose striate, squamulose at the top, colored like the pileus toward the base, paler above; spores .0005 of an inch long, .0003 broad.

Pileus 1.5–2.5 inches broad; stem 1–2 inches long, 4–6 lines thick.

Grassy places. Rensselaer county. September. Rare. Found but once.

Hygrophorus fuscoalbus (Lasch.) Fr.

GRAYISH BROWN HYGROPHORUS

Pileus convex becoming plane, even, glabrous, viscose, brownish becoming cinereous, paler on the margin; lamellae rather thick, broad, subdistant, adnate or decurrent, white; stem equal, solid, dry, white floccose at the top, whitish or brownish; spores .0003–.0004 of an inch long, .0002–.00024 broad.

Pileus 1–2 inches broad; stem 2–3 inches long, 1.5–3 lines thick.

Woods. Essex county. September. Rare. The typical form of this species is said to have a subannular floccose veil, a character which is not shown by our specimens. European authors do not agree in the dimensions ascribed to the spores of this species. In our specimens the dimensions of the spores agree with those given in *Sylloge*.

Hygrophorus hypothejus Fr.

SULFUR TINTED HYGROPHORUS

Pileus fleshy but thin, convex becoming plane or centrally depressed, even, virgate, glutinous, variable in color, grayish olive, yellowish olive or brownish, paler after the gluten disappears, flesh

thin with a slight yellow tinge; lamellae distant, decurrent, yellow, or whitish becoming yellowish; stem equal, stuffed or hollow, viscid, paler than the pileus, the partial floccose veil imperfectly annular, soon disappearing; spores .0003–.0004 of an inch long, .00016–.0002 broad.

Pileus 1–2 inches broad; stem 2–3 inches long, 3–5 lines thick.

Woods. Essex county. September. Rare. This species may be distinguished from its nearest relatives by its yellowish lamellae. It is more common southward where it occurs late in the season, growing specially in pine woods.

Hygrophorus lividoalbus Fr.

LIVID WHITE HYGROPHORUS

Pileus thin, convex or nearly plane, often irregular or wavy, even, glabrous, viscid, pallid or livid, naked on the margin; lamellae distant, adnate or slightly decurrent, white; stem slender, nearly equal, glabrous, stuffed, more or less flexuous, whitish; spores subglobose, .00024–.0003 of an inch long, .0002–.00024 broad.

Pileus 1–2 inches broad; stem 1.5–2.5 inches long, 2–3 lines thick.

Woods. Onondaga and Ulster counties. September. Rare. Our specimens do not fully agree with the description of the species in respect to the spore character which is given above, the European plant having larger and more elliptic spores. Further observation may show them to be closely related but distinct species.

Camarophyllus Fr.

Veil none; pileus firm, opaque, moist in rainy weather, not viscose; lamellae distant, arcuate; stem even, glabrous or fibrillose, not punctate scabrous.

The absence of a viscid pileus and of a hollow stem are decisive characters of the subgenus. In wet weather the pileus is only moist, not viscid. The stem is usually solid or stuffed. In a single species, Hygrophorus peckianus Howe, it sometimes becomes hollow.

KEY TO THE SPECIES

Pileus white or whitish 1
Pileus brown, grayish brown or blackish brown 3
Pileus neither white nor brown 6
1 Pileus more than 1 inch broad ..... virgineus
1 Pileus usually less than 1 inch broad 2
2 Stem 1–2 lines thick ..... borealis

2 Stem more than 2 lines thick.....pratensis
3 Pileus less than 1 inch broad.....peckianus
3 Pileus more than 1 inch broad.....4
4 Pileus glabrous.....5
4 Pileus not glabrous.....metapodius
5 Pileus blackish brown.....burnhami
5 Pileus grayish brown.....basidiosus
6 Pileus glabrous.....pratensis
6 Pileus not glabrous.....subrufescens

Hygrophorus virgineus (Wulf.) Fr.

WHITE HYGROPHORUS

State Mus. Mem. 3, p. 150, pl. 52, fig. 8–12.

Pileus fleshy, convex, often becoming plane or centrally depressed, sometimes irregular or wavy on the thin margin, moist, white, flesh white, taste mild; lamellae thick, distant, decurrent, white; stem firm, smooth, solid, equal or tapering downward, white; spores elliptic, .00024–.0003 of an inch long, .0002 broad.

Pileus 1–3 inches broad; stem 1–2 inches long, 3–5 lines thick.

It occurs in grassy places in wet weather and may be found from July to October. Albany, Essex and Rensselaer counties. In the European plant the surface of the pileus is said to become floccose when dry and sometimes to crack into small areas, but these characters have not been observed by us in the American plant. It is edible.

Hygrophorus borealis Pk.

NORTHERN HYGROPHORUS

State Mus. Rep't 26. 1874. Bot. ed. p. 64.

Pileus thin, convex or nearly plane, glabrous, moist, even, sometimes striatulate on the margin; lamellae distant, arcuate, decurrent, white; stem slender, firm, glabrous, straight or flexuous, equal or tapering downward, stuffed or solid, white; spores elliptic, .0003–.00035 of an inch long, .0002–.00024 broad.

Pileus 8–12 lines broad; stem 1–2 inches long, 1–2 lines thick.

Damp or moist ground in woods and swamps, occasionally in pastures. Common in hilly and mountainous regions. July to October. This small white species is closely allied to H. niveus (Scop.) Fr. from which it may be separated by its pileus which is neither viscid nor umbilicate.

Hygrophorus pratensis (Pers.) Fr.

MEADOW HYGROPHORUS

State Mus. Rep't 48, p. 279, pl. 28, fig. 11–17.

Pileus compact, convex, turbinate or nearly plane, often irregular, glabrous, thin on the margin, variable in color, tawny, reddish, buff, cinereous or whitish, flesh white or whitish, taste mild; lamellae thick, distant, decurrent, whitish or yellowish, the interspaces often veiny, stem short, even, glabrous, solid or stuffed, equal or narrowed downward, white or tinged with the color of the pileus; spores .00024–.0003 of an inch long, .00016–.0002 broad.

Pileus 1–3 inches broad; stem 2–3 inches long, 4–6 lines thick.

Scattered, gregarious or cespitose; growing in woods, pastures and grassy places. Common. July to September.

Several varieties of this variable species have been recognized. The names given them are mostly derived from their color. Var. albus. Whole plant white or whitish. Var. cinereus. Whole plant cinereous or the stem only whitish. Var. pallidus. Plant ochraceous white. The plants are edible when cooked.

Hygrophorus peckianus Howe

PECKIAN HYGROPHORUS

Bul. Torrey Bot. Club 5. 1874. p. 43.

Pileus rather thin but firm, convex or slightly depressed in the center, glabrous, hygrophanous, sooty brown when moist, paler or buff brown when dry, the margin often decurved and wavy; lamellae subdistant, thick, arcuate, decurrent, pallid, becoming darker with age; stem slender, glabrous, flexuous, stuffed, sometimes becoming hollow, often narrowed toward the base, colored like the pileus; spores subglobose, .0002–.00024 of an inch long.

Pileus 5–10 lines broad; stem 1.5–2 inches long, 1–2 lines thick.

Gregarious or cespitose. Growing under ferns. Hamilton county. August. The fresh plant emits a peculiar, indescribable odor. It is closely related to the European H. foetens Phil. and may be specifically the same. Its name, however, antedates that of the European plant.

Hygrophorus burnhami n. sp.

BURNHAM HYGROPHORUS

Pileus fleshy, broadly conic becoming convex or nearly plane, moist in wet weather, glabrous or slightly and obscurely innately

fibrillose on the margin, blackish brown, flesh white; lamellae narrow, sometimes forked, subdistant, adnate or slightly decurrent, white; stem equal, sometimes pointed or abruptly narrowed at the base, fibrillose striate, solid, whitish becoming tinged with the color of the pileus, white within and white tomentose at the base; spores elliptic, .0003–.0004 of an inch long, .0002–.00024 broad.

Pileus 1–2 inches broad; stem 1.5–3 inches long, 4–6 lines thick.

Gregarious. Growing in mixed woods. West Fort Ann, Washington co. October. S. H. Burnham.

This species is a near ally of H. caprinus (Scop.) Fr. from which it may be separated by its more glabrous pileus, more narrow and closer lamellae, which also are less decurrent. The stem is paler than the pileus and generally slightly radicated at the base and there covered with a white mycelioid tomentum. The lamellae are about 1 line broad.

Hygrophorus metapodius Fr.

CHANGED STEM HYGROPHORUS

Pileus compact, convex becoming nearly plane, often irregular, soon silky and squamulose, brown or grayish brown, flesh thick; lamellae thick, distant, adnate or somewhat decurrent, broadly emarginate, grayish white; stem unequal, sometimes narrowed toward the base, sometimes ventricose, stuffed, glabrous, cinereous, reddish within; spores .0003 of an inch long, .0002 broad.

Pileus 1.5–2 inches broad; stem 1–2 inches long, 3–5 lines thick.

Woods or groves. Ulster county. September. Rare. This species has been found but once. The specimens differ from the typical form in the flesh not becoming red where wounded and no odor was observed at the time of collection.

Hygrophorus basidiosus n. comb.

GRAYISH BROWN HYGROPHORUS

Clitocybe basidiosa Pk. State Mus. Bul. 2. 1887. p. 5.

Pileus rather thin, convex becoming nearly plane or centrally depressed, sometimes umbilicate, glabrous, hygrophanous, grayish brown and striatulate on the margin when moist, grayish white when dry, flesh whitish; lamellae subarcuate, thick, distant, adnate or slightly decurrent, whitish with a violaceous tint; stem equal or slightly thickened at the top, glabrous, firm, solid, whitish or

pallid; spores subglobose, .00016–.0002 of an inch long, basidia .0024 of an inch long, bearing spicules .0003 of an inch long.

Pileus 1–1.5 inches broad; stem 1–2 inches long, 1–2 lines thick.

Woods and swamps. Albany and Rensselaer counties. August.

This species was formerly taken to belong to the genus Clitocybe, but it now appears to be a better Hygrophorus than Clitocybe. It is remarkable for the elongated basidia and sterigmata of the hymenium. It is rare but easily recognized by the peculiar grayish brown hue of the moist plant and the slight violaceous hue of the lamellae.

Hygrophorus subrufescens Pk.

REDDISH HYGROPHORUS

State Mus. Bul. 67. 1903. p. 23, pl. M, fig. 1–6.

Pileus thin on the margin, convex or nearly plane, dry, minutely floccose or squamulose, pale pink or grayish red, flesh whitish, faintly tinged with pink, taste mild; lamellae subdistant, decurrent, whitish; stem equal or nearly so, flexuous, glabrous, solid or stuffed, white; spores elliptic, .0003 of an inch long, .0002 broad.

Pileus 1–1.5 inches broad; stem 1.5–3 inches long, 2–4 lines thick.

Fallen leaves in woods. Suffolk county. August. Rare. Found but once.

Hygrocybe Fr.

Veil none; pileus viscid when moist, shining when dry, rarely floccose scaly; lamellae soft; stem hollow, soft, glabrous.

The whole fungus is slender, watery, fragile; many of the species are brightly colored.

A few species without a viscid pileus are included in this subgenus because of their fragility, bright colors and hollow stems. By these characters they may be separated from the subgenus Camarophyllus.

KEY TO THE SPECIES

Pileus not viscid.....1
Pileus viscid.....5
1 Lamellae decurrent.....2
1 Lamellae not decurrent.....3
2 Pileus glabrous, pale yellow.....parvulus
2 Pileus usually squamulose, red, rarely yellow.....cantharellus
3 Pileus brown, sometimes tinged with green or yellow.....immutabilis
3 Pileus not brown.....4
4 Pileus pale yellow.....parvulus
4 Pileus golden yellow.....marginatus
4 Pileus usually red or orange, rarely yellow.....miniatus
5 Stem not viscid.....6

5 Stem viscid 10
6 Pileus some shade of red 7
6 Pileus not at all red ..... ceraceus
7 Pileus grayish red or tawny red ..... laricinus
7 Pileus bright red, orange or scarlet 8
8 Pileus acutely conic ..... conicus
8 Pileus not acutely conic 9
9 Stem red with a white base ..... puniceus
9 Stem red with a yellow base ..... coccineus
10 Stem and pileus with greenish slime when young 11
10 Stem and pileus not greenish 12
11 Lamellae decurrent ..... peckii
11 Lamellae adnate ..... psittacinus
12 Pileus white ..... purus
12 Pileus brown ..... luridus
12 Pileus neither white nor brown 13
13 Pileus less than 6 lines broad ..... minutulus
13 Pileus more than 6 lines broad 14
14 Pileus umbilicate ..... nitidus
14 Pileus not umbilicate 15
15 Lamellae adnexed ..... chlorophanus
15 Lamellae adnate or decurrent ..... laetus

Hygrophorus parvulus Pk.

SMALL HYGROPHORUS

State Mus. Rep't 28. 1876. Bot. ed. p. 50, pl. 1, fig. 20–24.

Pileus thin, hemispheric or convex, glabrous, striatulate on the margin when moist, pale yellow; lamellae subdistant, arcuate, adnate or decurrent, whitish or pale yellow; stem equal, glabrous, hollow, yellow or pale yellow; spores elliptic, .00024–.0003 of an inch long, .00016–.0002 broad.

Pileus 3–6 lines broad; stem 1–1.5 inches long, 1–1.5 lines thick.

Woods and open places. Common. August.

A noticeable feature in this species is found in the stem which is often more highly colored than the pileus. It sometimes grows under brakes, Pteris aquilina L.

Hygrophorus cantharellus Schw.

CHANTARELLE HYGROPHORUS

State Mus. Rep't 54. 1901. p. 175, pl. 76, fig. 8–20.

Pileus thin, convex, sometimes umbilicate, glabrous or minutely squamulose, red, orange or yellow; lamellae rather broad, distant, arcuate, decurrent, whitish or yellowish, sometimes tinged with red; stem slender, fragile, glabrous, stuffed or hollow, red, orange or

yellow; spores elliptic, .0003–.0004 of an inch long, .0002–.00024 broad.

Pileus 6–12 lines broad; stem 1–3 inches long, 1–2 lines thick.

Grégarious. Damp soil in woods or open places. Common. June to August. Edible.

Var. roseus Pk. Margin of the pileus wavy or lobed, the lobes often crowded or overlapping.

Var. flavipes Pk. Pileus red or orange, stem yellow.

Var. flaviceps Pk. Pileus yellow, stem red or reddish.

Var. flava Pk. Pileus and stem pale yellow.

Hygrophorus immutabilis Pk.

UNCHANGEABLE HYGROPHORUS

State Mus. Rep't 51. 1898. p. 292.

Pileus thin, conic or convex, umbonate, often striate when dry, greenish brown or yellowish brown, not changing color in drying; lamellae subdistant, whitish or yellowish; stem slender, glabrous, hollow, yellow; spores elliptic, .0004–.0005 of an inch long, .00024–.00028 broad.

Pileus 8–12 lines broad; stem 1–2 inches long, 1.5–2 lines thick.

Dry sandy soil in bushy places. Essex county. August. Rare. Found but once.

Hygrophorus marginatus Pk.

MARGINED HYGROPHORUS

State Mus. Rep't 28. 1876. Bot. ed. p. 50.

Pileus thin, fragile, convex, subcampanulate or nearly plane, often irregular, sometimes broadly umbonate, glabrous, shining, striatulate on the margin, bright golden yellow; lamellae rather broad, subdistant, ventricose, emarginate, adnexed, yellow, sometimes becoming orange or vermilion on the edge, interspaces venose; stem fragile, glabrous, often flexuous, compressed or irregular, hollow, pale yellow; spores broadly elliptic, .00024–.0003 of an inch long, .0002–.00024 broad.

Pileus 10–18 lines broad; stem 1–2 inches long, 1–2 lines thick.

Woods. Essex, Fulton and Rensselaer counties. August.

This beautifully colored hygrophorus resembles the European H. obrusseus Fr. in color, but it differs in its smaller size, more subglobose spores and the red color often assumed by the edge of the lamellae. This last character is suggestive of the specific name. It is so fragile that care is necessary to avoid breaking the

specimens when collecting them. Specimens have been received from correspondents that are said to be viscid when fresh and moist, but when received were not distinguishable from our specimens of this species. It is therefore probable that in wet weather this plant may be found viscid.

Hygrophorus miniatus Fr.

VERMILION HYGROPHORUS

State Mus. Rep't 48. 1896. Bot. ed. p. 182, pl. 28, fig. 1–10.

Pileus thin, fragile, convex becoming nearly plane, glabrous or minutely squamulose, often umbilicate, deep red or sometimes yellow; lamellae distant, adnate, yellow, often tinged with red or rarely wholly red; stem slender, glabrous, equal, stuffed or hollow, polished, colored like or a little paler than the pileus; spores .0003 of an inch long, .0002 broad.

Pileus .5–2 inches broad; stem 1–3 inches long, 1–2 lines thick.

Scattered, gregarious or cespitose. Woods and swamps, among mosses and fallen leaves or on bare ground. Common. June to September. Edible.

Var. subluteus Pk. [var. lutescens Pk. State Mus. Rep't 48, Bot. ed. p. 183]. Pileus yellow or reddish yellow; lamellae and stem yellow.

Var. congelatus Pk. [Hygrophorus congelatus Pk. State Mus. Rep't 23, p. 114]. Pileus small, convex, dingy red, glabrous; lamellae subemarginate, red.

Var. sphagnophilus Pk. Pileus subconic or broadly convex, sometimes centrally depressed, glabrous, red or orange; stem colored like or a little paler than the pileus, white or yellow at the base. Growing among peat mosses in bogs. More fragile than the typical form.

The vermilion hygrophorus is a very variable but beautiful species. Unfortunately its colors are apt to fade and its beauty to be lost in drying.

Hygrophorus ceraceus (Wulf.) Fr.

WAXY HYGROPHORUS

Pileus thin, fragile, convex becoming plane, striatulate, viscid, shining, waxy yellow; lamellae broad, almost triangular, distant, adnate or slightly decurrent, pale yellow; stem sometimes unequal and flexuous, hollow, shining, waxy yellow; spores elliptic, .0003 of an inch long, .00016–.0002 broad.

Pileus about 1 inch broad; stem 1–2 inches long, 1–2 lines thick.

Gregarious. Mossy ground or grassy places. Albany, Essex and Ulster counties. September. A small species having very broad lamellae, which are scarcely decurrent. Its waxy yellow color is suggestive of the specific name.

Hygrophorus laricinus Pk.

LARCH HYGROPHORUS

State Mus. Mem. 3. 1900. p. 146, pl. 51, fig. 1–12.

Pileus thin, convex becoming plane, viscid when moist, grayish red, rusty red or tawny red, sometimes white or yellow on the margin, flesh white, slightly tinged with yellow under the cuticle, taste slightly disagreeable; lamellae distant, adnate or slightly decurrent, whitish; stem equal, firm, hollow, white; spores elliptic, .00024–.0003 of an inch long, .00016–.0002 broad.

Pileus 6–12 lines broad; stem 1–2 inches long, 2–3 lines thick.

Gregarious under tamarack trees. Warren county. October. Rare. Edible. Found but once. The flesh is tender and of good flavor when cooked.

Hygrophorus conicus (Scop.) Fr.

CONIC HYGROPHORUS

Pileus thin, conic, acute or subacute, fragile, glabrous or fibrillose, viscid when moist, shining when dry, often lobed on the margin, red, scarlet, orange or yellow; lamellae thin, rather close, ventricose, narrowed behind, almost free, commonly yellowish; stem equal, fibrously striate, hollow, yellow; spores broadly elliptic, .0004–.0005 of an inch long, .00024–.0003 broad.

Pileus 6–10 lines high and broad; stem 1–4 inches long, 1–2 lines thick.

Woods and in mossy or grassy places. Common. June to September. This species is easily recognized by the conic shape of the pileus which usually terminates in an acute point. Wounded places in the fresh plant are apt to turn black and the whole plant usually turns black in drying. The color of the pileus is variable and Gillet has published several varieties founded on this character. The viscidity of the cap is slight.

Hygrophorus puniceus Fr.

RED HYGROPHORUS

State Mus. Mem. 3. p. 149, pl. 52, fig. 1–7.

Pileus thin, fragile, broadly conic or campanulate, becoming nearly plane, often wavy or lobed on the margin, glabrous, viscid, bright red, paler when old; lamellae broad, thick, distant, slightly adnexed, yellow, often reddish; stem equal or slightly ventricose, hollow, glabrous, yellow or red and yellow, white at the base; spores elliptic, .0003–.0004 of an inch long, .0002 broad.

Pileus 1–3 inches broad; stem 2–3 inches long, 4–6 lines thick.

Damp or mossy places in woods or open ground. Albany and Rensselaer counties and the Adirondack region. Not common. August and September. Edible.

A conspicuous but very tender and fragile mushroom, often larger than our other bright red species of this genus.

Hygrophorus coccineus (Schaeff.) Fr.

SCARLET HYGROPHORUS

Pileus thin, fragile, convex becoming plane, viscid, glabrous, bright red becoming pale, flesh red; lamellae distant, adnate or furnished with a decurrent tooth, pale yellow or reddish, the interspaces veiny; stem terete or compressed, glabrous, hollow, crimson red above, yellow at the base; spores .0003–.0004 of an inch long, .0002–.00024 broad.

Pileus 1–2 inches broad; stem 1–2 inches long, 1–2 lines thick.

Pastures and mossy meadows. Albany, Ulster and Essex counties. September and October. Not common.

Hygrophorus peckii Atk.

PECK HYGROPHORUS

Jour. Myc. 8. 1902. p. 114.

Pileus thin, fragile, convex becoming nearly plane, often slightly umbilicate or centrally depressed, very viscid or glutinous, buff becoming pinkish or vinaceous buff, sometimes tinged with green; lamellae broad, distant, arcuate, decurrent, whitish or sometimes greenish when young; stem slender, sometimes splitting longitudinally, very viscid, colored like the pileus, sometimes greenish at the top; spores elliptic, .00024–.0003 of an inch long, .00016–.0002 broad.

Pileus 5–10 lines broad; stem 1–4 inches long, 1–2 lines thick.

Plants scattered or gregarious, often odorous. Woods and open places. Hamilton, Saratoga and Tompkins counties. July and August.

The green color is due to the gluten and it quickly disappears when the gluten dries. The species is closely related to H. psittacinus Fr. from which it may be separated by the pileus which is neither campanulate nor umbonate and by the lamellae which are paler, less ventricose and more decurrent. The plant is very fragile and must be handled carefully to prevent breaking. In color it resembles H. laetus (Pers.) Fr.

Hygrophorus psittacinus (Schaeff.) Fr.

PARROT HYGROPHORUS

Pileus thin, conic or campanulate becoming nearly plane, somewhat umbonate, striatulate, covered when young with an evanescent greenish gluten, yellowish, reddish or whitish; lamellae thick, subdistant, ventricose, adnate, yellow, more or less tinged with green; stem tough, even, hollow, viscid, green at the top, yellow below; spores .0003 of an inch long, .0002 broad.

Pileus 6–12 lines broad; stem 1–2 inches long, 1–2 lines thick.

Pastures, swamps and clearings, often under brakes, Pteris aquilina L. Lewis county. September to November. Rare

The green color is generally more persistent at the top of the stem than elsewhere, both in this and in the preceding species.

Hygrophorus purus Pk.

PURE HYGROPHORUS

State Mus. Rep't 26. 1874. p. 63.

Pileus thin, fragile, conic becoming expanded and cupulate by the upcurving of the thin margin, very viscid, often irregular, white; lamellae subdistant, broad, ventricose, emarginate with a decurrent tooth, white; stem glabrous, subflexuous, fragile, hollow, very viscid; spores .0003 of an inch long, .0002 broad.

Pileus 1–2 inches broad; stem 3–6 inches long, 2–3 lines thick.

Thin woods. Lewis county. September. Rare. Found but once.

H. calyptraeformis niveus Cke. scarcely differs from this. H. calyptraeformis Berk. differs in its beautiful pink or pinkish rose color.

Hygrophorus luridus B. & C.

LURID HYGROPHORUS

Pileus thin, campanulate or convex becoming nearly plane, umbonate, very viscid, coarsely striate or sulcate striate on the margin, brown or pale brown with a dark center; lamellae thick, distant, ventricose, adnate or slightly decurrent, white; stem slender, hollow, viscid, colored like the pileus; spores .00024–.0003 of an inch long, .0002–.00024 broad.

Pileus 6–12 lines broad; stem 1–2 inches long, 1–1.5 lines thick.

Swamps and damp places. Rensselaer, Saratoga and Hamilton counties. July and August. Not before reported from our State.

The type specimens were collected in North Carolina but our northern plant agrees very well with the description of the species except in having no umbo. No spore characters are given in the original description. The dimensions here given are derived from the spores of the northern plant.

Hygrophorus minutulus Pk.

MINUTE HYGROPHORUS

State Mus. Bul. 2. 1887. p. 9.

Pileus very thin, submembranaceous, convex or expanded, subumbilicate, bright red or orange, viscid, distinctly striatulate when moist, pale red or yellowish when dry; lamellae rather broad, subdistant, sometimes ventricose, adnate or subsinuate and slightly decurrent, whitish tinged with red or yellow; stem short, slender, fragile, solid, viscid when moist, yellowish; spores narrowly elliptic, .0004 of an inch long, .0002 broad, sterigmata .0002–.0003 of an inch long.

Pileus 3–5 lines broad; stem 6–10 lines long, less than .5 of a line thick.

Grassy and mossy places in pastures. Rensselaer county. July. Rare. Found but once.

This is one of our smallest species. Its solid stem does not agree well with the character of the subgenus in which we have placed it, but its bright color indicates its relationship to the species of this subgenus.

Hygrophorus nitidus B. & C.

SHINING HYGROPHORUS

State Mus. Bul. 94. p. 45, pl. 88, fig. 1–7.

Pileus thin, fragile, convex, umbilicate, viscid, pale yellow, shining and striatulate on the margin when moist, whitish when dry; lamellae arcuate, distant, decurrent, pale yellow; stem slender, fragile, viscid, hollow, colored like the pileus; spores .00024–.0003 of an inch long, .0002–.00024 broad.

Pileus 4–12 lines broad; stem 1.5–3 inches long, 1–2 lines thick.

Gregarious or cespitose. Swamps and low damp places. Common. July and August. Edible.

A pretty little mushroom pale yellow throughout, very fragile and very viscid. The yellow color of the lamellae and stem is more persistent than that of the pileus.

Hygrophorus chlorophanus Fr.

SULFURY HYGROPHORUS

State Mus. Mem. 3. p. 147, pl. 51, fig. 13–20.

Pileus thin, fragile, convex becoming nearly plane, often irregular with the margin split or lobed, glabrous, viscid, striate on the margin, pale yellow, sometimes tinged with red in the center; lamellae rather broad, subdistant, thin, ventricose, emarginate, adnexed, pale yellow; stem equal or nearly so, glabrous, viscid when moist, shining when dry, hollow, pale yellow; spores .0003 of an inch long, .0002 broad.

Pileus 8–20 lines broad; stem 1.5–3 inches long, 1–2 lines thick.

Damp or mossy places in woods. Common. July to September. Edible.

Hygrophorus laetus (Pers.) Fr.

PLEASING HYGROPHORUS

Pileus thin, convex, becoming plane, viscid, even or striatulate on the margin, somewhat shining, tawny; lamellae thin, distant, somewhat decurrent, whitish or flesh colored; stem slender, equal, tough, hollow, glabrous, viscid, tawny or pale tawny; spores .00024–.0003 of an inch long, .0002 broad.

Pileus 6–12 lines broad; stem 1–3 inches long, 1–2 lines thick.

Thin woods and pastures. Common. July to September.

When dry the color resembles that of dried specimens of the Peck hygrophorus.

Hygrophorus aurantiacoluteus B. & C., H. cossus (Sow.) Fr. and H. penarius Fr. have been omitted, the specimens formerly referred to these species being doubtful.

NEW YORK SPECIES OF RUSSULA

Russula Pers.

Veil none; hymenophorum descending unchanged into the vesiculose trama; lamellae rigid, fragile, without a milky juice, acute on the edge; spores globose or subglobose, often echinulate or verrucose, white or yellow.

Fleshy putrescent terrestrial fungi.

This genus is closely related to the genus Lactarius, from which it is easily distinguished by the absence of a milky juice. Young plants of some species have the lamellae, when in vigorous growing condition, adorned with small drops of water, but no milky or colored juice issues from wounds as in species of Lactarius. The pileus is destitute of concentric zones, but in the genus Lactarius such markings are frequent. The red colors which are so conspicuous and common in this genus are rarely if ever seen in Lactarius. In the flavor of the flesh there is great similarity. In both genera many species have a mild or an agreeable flavor and many others have an acrid, hot or peppery taste. This disagreeable flavor is generally destroyed in cooking so that nearly all the species that have been tried have been found to be edible.

The genus was divided by Fries into five tribes or subgenera, but these are not sharply limited and are scarcely satisfactory. Nevertheless we have attempted to group our species as nearly as possible in accordance with them. Some species also are so clearly related to each other that they are liable to be confused unless great care and close observation are exercised. It is important to observe the color of the pileus in both young and mature plants, the character of its surface and its margin, the character and color of the lamellae, the taste of the flesh and the color of the spores. Though the species are numerous their general appearance and form are so peculiar and so much alike that it soon becomes easy to recognize the generic character even in an unknown species.

KEY TO THE SUBGENERA

Margin of the mature pileus even.....1
Margin of the mature pileus striate.....2
1 Lamellae unequal, not often forked.....Compactae

1 Lamellae often forked, narrowed toward each end.....Furcatae
1 Lamellae often forked, narrowed toward the stem.....Rigidae
2 Lamellae unequal, viscid pellicle adnate.....Heterophyllae
2 Lamellae mostly equal, viscid pellicle separable.....Fragiles

Compactae Fr.

Pileus fleshy, compact, firm, without a separable pellicle and without striations on the margin; lamellae unequal; stem firm, solid, rarely cavernous when old.

In all our species the spores are white. In nearly all, wounds of the lamellae or flesh change color. Five of the species are so closely related that in the dried state it is scarcely possible to separate them from each other satisfactorily. Their differential characters are chiefly such as can be ascertained only in the living plant. All are mild or tardily acrid in taste. The compact flesh, even margin of the pileus and unequal lamellae are the prominent characters of this subgenus.

KEY TO THE SPECIES

Pileus changing color with age or in drying.....1
Pileus persistently white or whitish.....7
1 Pileus becoming smoky brown, grayish brown or blackish.....2
1 Pileus becoming pale tawny or rusty ochraceous.....6
2 Pileus viscid when moist.....3
2 Pileus dry.....4
3 Lamellae and flesh slowly becoming reddish where wounded.....nigricans
3 Lamellae and flesh not becoming reddish where wounded.....subsordida
4 Flesh slowly becoming reddish where wounded.....densifolia
4 Flesh not becoming reddish where wounded.....5
5 Flesh becoming black or blackish where wounded.....sordida
5 Flesh not changing color where wounded.....adusta
6 Pileus viscid when moist, odorous.....magnifica
6 Pileus dry, inodorous when fresh.....compacta
7 Lamellae persistently white.....delica
7 Lamellae becoming subferruginous in drying.....brevipes

Russula nigricans (Bull.) Fr.

BLACKISH RUSSULA

Pileus thick, firm, at first convex and umbilicate with the margin incurved, becoming expanded and centrally depressed, at first white or white clouded with smoky brown, slightly viscid, becoming blackish or blackish brown, flesh white, first slowly changing to a reddish hue when cut or broken then becoming blackish, taste mild; lamellae broad, subdistant, slightly rounded behind, adnexed, white becoming

blackish with age or in drying; stem short, solid, white becoming dingy or smoky brown with age; spores subglobose, .0003–.0004 of an inch long, nearly or quite as broad.

Pileus 3–5 inches broad; stem 1–2.5 inches long, 6–12 lines thick.

Woods and clearings. July and August. Edible.

The dark color of the cooked mushroom gives it an unattractive appearance but its flavor is excellent. This and the following species of which the pileus becomes smoky brown or blackish brown are apt to be infested by the larvae of insects even when quite young. The injury done by them to the flesh causes it to become blackish.

Russula subsordida Pk.

SUBSORDID RUSSULA

State Mus. Bul. 105. p. 40, pl. 99, fig. 1–5.

Pileus firm, convex becoming nearly plane or centrally depressed, glabrous, viscid when young or moist, whitish becoming smoky brown with age, sometimes with an olive-green tint, flesh grayish white, slowly changing to smoky brown when cut or broken, taste mild or slightly and tardily acrid; lamellae thin, close, adnate, whitish becoming black or blackish with age or in drying; stem short, glabrous, solid becoming spongy within and sometimes cavernous, white becoming smoky brown with age or where wounded; spores globose, .0003 of an inch broad.

Pileus 2–5 inches broad; stem 1–1.5 inches long, 6–12 lines thick.

Woods. Warren county. July. Rare. Edible.

Easily distinguished from R. s o r d i d a by its viscid pileus. Horicon, Warren co. yet remains the only locality known for this species.

Russula sordida Pk.

SORDID RUSSULA

State Mus. Bul. 105. 1906. p. 39, pl. 98, fig. 1–5.

Pileus convex becoming centrally depressed, dry, glabrous, dingy white becoming smoky brown with age, flesh grayish white, changing to blackish brown or bluish black where cut or broken, taste mild or tardily acrid; lamellae close, unequal, adnate or slightly decurrent, sometimes forked, white changing to black or blackish brown with age or in drying; stem short, firm, equal, solid, colored like the pileus; spores globose, .0003 of an inch broad.

Pileus 3–6 inches broad; stem 1–2 inches long, 6–12 lines thick.

Under hemlock trees. Common in hemlock regions. July. Edible.

From R. subsordida it may be separated by its dry pileus, its more clear white lamellae and by the wounds of the flesh more quickly assuming a blackish color. From R. nigricans and R. densifolia both this and the preceding species may be separated by the absence of reddish hues in the change of color assumed by wounds.

Russula densifolia Secr.

DENSE GILLED RUSSULA

Pileus convex becoming nearly plane or centrally depressed, even, glabrous, whitish becoming gray or sooty brown, sometimes darker in the center, flesh white, slowly changing to reddish and then blackish where wounded, taste mild; lamellae thin, close, adnate or decurrent, white, sometimes tinged with red; stem cylindric, even, solid, slightly pruinose, whitish becoming grayish brown or blackish; spores globose, .0003 of an inch broad.

Pileus 2–4 inches broad; stem 1–2 inches long, 5–9 lines thick.

Woods. Suffolk county and Adirondack mountains. July and August.

Related to R. adusta Fr. from which it is distinguished by wounds of the flesh assuming a reddish color. From R. nigricans Fr. it may be separated by its lamellae being adnate or slightly decurrent and more crowded. Sometimes the lamellae, at their inner extremity, separate from the stem and flesh of the pileus and curve outward and upward. This form appears to be slightly viscid when moist and may prove to be worthy of separation. It is R. densifolia paxilloides Pk. in State Museum bulletin 75, 1904, page 20.

Russula adusta (Pers.) Fr.

SCORCHED RUSSULA

Pileus convex becoming centrally depressed or somewhat infundibuliform, white or whitish becoming brownish or sooty gray, flesh white, not changing color where wounded, taste mild; lamellae thin, narrow, close, adnate or slightly decurrent, sometimes slightly rounded behind, white becoming dingy; stem solid, cylindric, colored like the pileus; spores subglobose, .0003–.0004 of an inch long, .00024–.0003 broad.

Pileus 2–3 inches broad; stem 1–2 inches long, 4–8 lines thick.

Woods. Albany and Warren counties. July to September. Rare.

The notable characters of the species are its thin, close, adnate lamellae changing color but slightly with advancing age, its unchangeable flesh and its mild taste. The plant does not become blackish in drying as do the preceding species but assumes a smoky brown or grayish brown hue. It sometimes grows under pine needles which it pushes up enough to reveal its place of growth.

Russula magnifica Pk.

MAGNIFICENT RUSSULA

State Mus. Bul. 67. 1903. p. 24, pl. N, fig. 1–4.

Pileus convex and umbilicate becoming centrally depressed or infundibuliform, glabrous, viscid when young and moist, even or sometimes slightly rimose squamose in the center, whitish becoming pale rusty ochraceous, flesh white or whitish, odor and taste alkaline, strong and disagreeable; lamellae narrow, close, adnate or slightly decurrent, whitish with a faint pinkish tint, becoming reddish brown where wounded and a dark reddish brown or reddish cinnamon in drying; stem equal or tapering downward, solid becoming spongy or sometimes cavernous within, white or whitish; spores subglobose, even or nearly so, .0003–.0004 of an inch long, .00025–.0003 of an inch broad.

Pileus 4–10 inches broad; stem 2–5 inches long, 8–18 lines thick.

Among fallen leaves in woods. Suffolk county. August. Local.

A limited locality near Port Jefferson is the only station known to me where this species has been found. It is the largest russula known to me and is related to R. compacta Frost and R. brevipes Pk.

Russula compacta Frost

COMPACT RUSSULA

State Mus. Rep't 32. 1879. p.32; State Mus. Bul. 116. pl. 109, fig. 1–4.

Pileus fleshy, compact, broadly convex, sometimes umbilicate becoming centrally depressed or even infundibuliform by the upcurving of the margin, dry or subviscid after heavy rain, unpolished, at first white or whitish, becoming rusty ochraceous, flesh white, taste mild or sometimes slightly and tardily acrid, odor in drying strong and disagreeable; lamellae rather close or subdistant, adnate or slightly rounded behind, unequal, occasionally forked, white, be-

coming reddish brown where wounded and smoky brown in drying; stem short, stout, equal or nearly so, solid, white, but becoming stained with reddish brown in handling or where wounded, and sometimes changing colot like the pileus; spores globose or subglobose, .0003–.0004 of an inch long, .0003 broad.

Pileus 3–6 inches broad; stem 1.5–2.5 inches long, 6–12 lines thick.

Ground in woods. Essex, Onondaga, Rensselaer and Suffolk counties. July to September. Edible.

Russula brevipes Pk.

SHORT STEM RUSSULA

State Mus. Rep't 43. 1890. Bot. ed. p. 20, pl. 2, fig. 5–8.

Pileus convex and umbilicate, becoming centrally depressed or infundibuliform, dry, glabrous or nearly so, white or whitish, often with yellowish or rusty yellow stains or patches in the center, flesh whitish, taste mild or slightly and tardily acrid; lamellae thin, close, adnate or decurrent, rarely slightly rounded behind, white becoming tinged with pale cinnamon or ferruginous in age or in drying; stem firm, solid, glabrous, white; spores globose, .0004–.0005 of an inch broad.

Pileus 3–5 inches broad; stem 1–2 inches long, 6–10 lines thick.

Woods and open places. Common. July to October.

This species exhibits less change of color than any of the preceding ones of this subgenus. The lamellae however change with age and in drying and because of this change, their close position, the unpolished and opaque character of the pileus and the slightly acrid taste I have separated it from R. delica, which it closely resembles and to which our plant was formerly referred. It has been referred by Bresadola to R. chloroides (Krombh.) but I have never seen the pileus rimose areolate, nor the lamellae greenish or glaucous as in that species. The lamellae of both this and the following species are sometimes adorned with watery drops in wet weather. In the type form the stem is very short, but when the plant grows among fallen leaves it is longer.

Russula delica Fr.

WEANED RUSSULA

Pileus fleshy, firm, broadly convex and umbilicate, becoming infundibuliform, even, glabrous, shining, white, the margin involute

and without striations; lamellae thin, distant, decurrent, persistently white; stem short, even, glabrous, white; spores subglobose, .0003–.0004 of an inch long, .00024–.0003 broad.

Pileus 2–4 inches broad; stem 1–2 inches long, 4–6 lines thick.

Woods. Saratoga county. Rare.

The specimens referred to this species have the white color of the lamellae more persistent than in any of the preceding species and the lamellae are less crowded than in the short stem russula. Nevertheless they have a pale yellowish hue in the dried state and are scarcely as wide apart as the description of the species would indicate, but the disagreement is so slight that it is not sufficient cause for a separation of our plant.

Furcatae Fr.

Pileus compact, firm, even on the thin margin, the thin pellicle closely adnate; lamellae unequal, some of them forked, commonly narrowed toward each end.

The thin but even margin with acute edge and the forked lamellae are the notable characters of this subgenus. The lamellae do not show decided changes in color with age or in drying, as in most species of the preceding subgenus. In some species the pellicle is separable on the margin.

KEY TO THE SPECIES

Pileus green, olive-green or purple or these intermingled.....1
Pileus whitish tinged with yellow or reddish yellow.....basifurcata
1 Lamellae becoming yellowish with age.....olivascens
1 Lamellae persistently white or whitish.....2
2 Lamellae subdistant.....furcata
2 Lamellae close, many forked.....variata

Russula basifurcata Pk

PALE CAP RUSSULA

State Mus. Rep't 38. 1885. p. 90.

Pileus firm, convex, umbilicate, becoming subinfundibuliform, glabrous, slightly viscid when moist, the pellicle separable on the even margin only, dingy white, often tinged with yellow or reddish yellow, flesh white, taste mild, then bitterish; lamellae close, narrowed toward the base, adnate or slightly emarginate, many of them forked at or near the base,, a few short ones intermingled, white becoming yellowish; stem firm, solid, becoming spongy

within, white; spores elliptic, pale yellow, .00035 of an inch long, .00025 of an inch broad.

Pileus 2–3 inches broad; stem 8–12 lines long, 5–6 lines thick.

Dry ground in woods and bushy places. Fulton and Essex counties. July and August.

Closely related to the next following species and like it somewhat related to the subgenus Fragiles in some of its characters.

Russula olivascens Fr.

PALE OLIVACEOUS RUSSULA

Pileus convex or nearly plane, umbilicate, olivaceous or pale green, becoming yellowish in the center, even on the margin, flesh white, taste mild; lamellae narrowed toward the stem, close, slightly adnexed, nearly equal, rarely forked, white becoming yellowish; stem firm becoming spongy within, even, white; spores subglobose, yellowish, .0003–.0004 of an inch long, nearly or quite as broad.

Pileus 2–3 inches broad; stem 1–2 inches long, 4–8 lines thick.

Woods. Suffolk county. August.

This species differs from the preceding in the greenish color of the cap, the gills more equal and rarely forked, the absence of a bitterish flavor and in the more globose yellowish spores.

Russula furcata (Pers.) Fr.

FORKED RUSSULA

Pileus convex becoming nearly plane, centrally depressed or infundibuliform, glabrous, the thin pellicle separable on the thin, even, acute margin, varying from pale yellowish green to dark brownish green, sometimes slightly tinged with purple, flesh white, taste mild; lamellae thickish, subdistant, often forked, unequal, adnate or slightly decurrent, white; stem equal or nearly so, solid or spongy within, white; spores white, subglobose, .0003.–.00035 of an inch long, .00025–.0003 of an inch broad.

Pileus 2–4 inches broad; stem 1.5–3 inches long, 5–8 lines thick.

Woods. Albany county. July.

The European plant is said to have a mild taste becoming bitterish, and no purplish tints are attributed to the pileus. In our plant the bifurcations of the lamellae occur mostly near the inner and outer extremities. It is thus far limited to a single locality near Albany.

Russula variata Banning

VARIABLE RUSSULA

State Mus. Bul. 105. 1906. p. 41, pl. 101, fig. 1–5

Pileus firm, convex becoming centrally depressed or subinfundibuliform, viscid, even, the thin pellicle separable on the thin even margin, reddish purple or brownish purple, often variegated with green or wholly pea-green, flesh white, taste acrid or sometimes slightly and tardily acrid; lamellae thin, narrow, close, often forked, tapering toward each end, adnate or slightly decurrent, white; stem equal or nearly so, solid or sometimes cavernous, white; spores white, subglobose, .0003–.0004 of an inch long, .0003 of an inch broad.

Pileus 2–4 inches broad; stem 1.5–3 inches long, 5–8 lines thick.

Woods. Common and variable. July and August. Edible.

Distinguished from the forked russula by its more forked narrow and closer lamellae and by its acrid flavor. This is destroyed by cooking. The pileus may be dark purple or pinkish purple either wholly or intermingled with pale green or it may be wholly pale green. R. aeruginascens Pk. [State Mus. Rep't 53, p. 843] is a form of this species with yellowish green pileus.

Rigidae Fr.

Pileus compact, firm, commonly dry, without a distinct viscid pellicle, the cuticle often cracking or breaking into adnate scales or furfuraceous granular or mealy particles, the margin typically even, lamellae broader anteriorly causing the margin to appear obtuse.

The most notable character of the group is the dry surface of the pileus becoming squamose, granular, mealy pruinose or unpolished. The margin is commonly even as in the two preceding groups, but there are several exceptions to this. The lamellae are normally forked and unequal, but in a few instances they are nearly equal.

KEY TO THE SPECIES

Pileus green or greenish.....1
Pileus some other color.....4
1 Pileus even on the margin.....2
1 Pileus striate on the margin when mature.....crustosa
2 Taste mild 3
2 Taste acrid .....viridella
3 Surface of the pileus scaly or warty.....virescens
3 Surface of the pileus irregularly rimose on the margin.....cutefracta

3 Surface of the pileus even, not rimose nor squamose.....modesta
4 Stem yellow .....flavida
4 Stem not yellow 5
5 Pileus pruinose, red or purple.....mariae
5 Pileus not pruinose.....6
6 Pileus striate on the margin when mature.....crustosa
6 Pileus even on the margin.....7
7 Surface of the pileus polished, taste acrid.....rubra
7 Surface of the pileus not polished, taste not acrid.....8
8 Surface of the pileus even, dark red or purplish red.....9
8 Surface of the pileus often rimose areolate, color variable.....lepida
9 Young lamellae white, changing color where wounded.....squalida
9 Young lamellae yellow, not changing color where wounded....ochrophylla

Russula viridella Pk.

PALE GREEN RUSSULA

State Mus. Bul. 105. 1906. p. 41, pl. 100, fig. 1–7.

Pileus subglobose, hemispheric or very convex, becoming nearly plane or centrally depressed, even on the margin, dry, soon minutely squamulose or furfuraceous, specially toward the margin, pale grayish green, generally smooth and paler or subochraceous in the center, flesh white, taste acrid; lamellae thin, narrow, close, some of them forked, a few short ones intermingled, white; stem equal or nearly so, even, solid or spongy within, white; spores white tinged with yellow, globose or subglobose, .00024–.0003 of an inch long, nearly as broad, cystidia subfusiform, .0025–.003 of an inch long, .0006 broad.

Pileus 2–4 inches broad; stem 2–3 inches long, 5–8 lines thick.

Under hemlock trees. Horicon, Warren co. July. Edible.

It has yet been found in no other locality so far as we know. The acridity is destroyed by cooking.

Russula virescens (Schaeff.) Fr.

GREENISH RUSSULA

State Mus. Rep't 48. Bot. ed. p. 189, pl. 31, fig. 1–8.

Pileus fleshy, at first nearly globose, soon convex or nearly plane often becoming centrally depressed, dry, adorned with small flocculent patches or warts, the margin even, green or grayish green, flesh white, taste mild; lamellae moderately close, narrowed toward the stem, free or nearly so, a few of them forked and a few shorter ones sometimes intermingled, white; stem short, firm, white; spores subglobose, white, .00024–.0003 of an inch long.

Pileus 2–4 inches broad; stem 1–2 inches long, 6–10 lines thick.

Thin woods and in grassy open places. Not rare. July and August. Edible.

The margin of the pileus is usually even but occasionally in old specimens it may be partly striate.

Russula cutefracta Cke.

BROKEN SKIN RUSSULA

Pileus convex becoming centrally depressed, dry, even on the margin, the cuticle cracking somewhat radiately but irregularly on the margin, color variable, green, red or purple, flesh white, purplish under the cuticle, taste mild; lamellae narrowed toward the base, somewhat close, some forked, adnexed or nearly free, white; stem solid, firm, nearly equal, whitish or tinged with purple; spores globose, .0004 of an inch broad.

Pileus 3–4 inches broad; stem 2–3 inches long, 6–10 lines thick.

Woods and their borders. Albany county. October.

I have admitted this species on the strength of a single specimen which agrees very closely with Cooke's figure 1040, illustrating the form with green pileus. Still it differs in having the flesh white instead of pinkish under the cuticle. It must be an extremely rare species with us.

Russula crustosa Pk.

CRUSTOSE RUSSULA

State Mus. Bul. 67. 1903. p. 45, pl. 84, fig. 1–7.

Pileus convex becoming nearly plane or centrally depressed, marked with small appressed areolate scales except on the smooth mostly depressed and sometimes subviscid disk, striate on the margin when mature, color variable, stramineous, pale ochraceous, brownish ochraceous, greenish or greenish yellow, rarely brownish purple, the center sometimes paler, sometimes darker than the margin, flesh white, taste mild or slightly and tardily acrid; lamellae moderately close, narrowed toward the stem, some of them forked, some short, white; stem short, stout, equal, stuffed or hollow, white; spores subglobose, white, .0003–.0004 of an inch long, .00025–.0003 of an inch broad.

Pileus 3–5 inches broad; stem 1–2.5 inches long, 6–12 lines thick.

Woods and open places. Common. July and August. Edible.

The striate margin separates this species from all the others in this subgenus. In this it is nearly always present in the mature

plants, in some of the other species it may sometimes appear but it is exceptional. This character militates against the character of the subgenus and connects with the next following one. Sometimes the cuticle cracks on the margin very much as in R. cutefracta but the paler and different colors of the pileus, the white flesh beneath the cuticle and the striate margin easily prevent any confusion of these species. The scales of the pileus often appear as if formed from the breaking up of a crustose cuticle. This sometimes has a grayish appearance.

Russula modesta n. sp.

MODEST RUSSULA

Pileus firm but thin and flexible, broadly convex, becoming nearly plane or centrally depressed, dry, pruinose, even or obscurely striate on the margin, greenish gray, paler on the margin, flesh white, taste mild; lamellae thin, close, many forked at the base, a few short ones, narrowed toward each end, adnate or slightly decurrent, white becoming yellowish, the interspaces venose; stem short, cylindric, solid, glabrous, white; spores subglobose, pale yellowish, .00025–.0003 of an inch long, nearly as broad.

Pileus 1–2.5 inches broad; stem 1–1.5 inches long, 3–5 lines thick.

Woods. Albany county. July.

This species differs from its allies in the pruinose appearance of the surface of the pileus. Under a lens, this is seen to be due to a minute whitish tomentose pubescence. A form of this species with the pileus more distinctly green has been received from Miss T. L. Smith who collected it under oak trees and reports it to be edible.

Russula flavida Frost

YELLOWISH RUSSULA

State Mus. Bul. 105. 1906. p. 38, pl. 97, fig. 1–6.

Pileus firm, convex becoming nearly plane or centrally depressed, dry, frequently sprinkled with minute mealy yellowish particles, specially on the margin, pale yellow, sometimes brighter yellow or orange in the center, flesh white, taste mild; lamellae rather thick, moderately close, entire or nearly so, adnate, white; stem equal or slightly tapering upward, solid, sometimes becoming spongy within, occasionally cavernous, colored like the pileus or a little paler, sometimes brighter at the base; spores yellowish, subglobose, .0003 of an inch long, nearly as broad.

Pileus 2–3 inches broad; stem 1.5–3 inches long, 4–8 lines thick.

Woods and bushy places. Rensselaer, Suffolk and Warren counties. July and August. Edible.

The margin of the pileus in old plants sometimes becomes striate and occasionally fades to white. The species is easily recognized by having both stem and pileus yellow and the intervening lamellae white.

Russula lepida Fr.

SCALY RUSSULA

Pileus firm, compact, convex becoming nearly plane, dry, unpolished, often rimose areolate in part, even on the margin, variable in color, red, bright red, red in the center with yellowish margin or wholly yellow, flesh white, taste mild becoming somewhat acrid or disagreeable; lamellae close, narrowed toward the stem, rounded behind or slightly decurrent, some forked at the base, a few short ones intermingled, white becoming yellowish; stem equal or nearly so, solid, white or whitish, sometimes reddish; spores globose, yellowish, .0003–.0004 of an inch in diameter.

Pileus 2–4 inches broad; stem 1–2.5 inches long, 6–10 lines thick.

Woods. Albany and Suffolk counties. July and August. Not common.

The description here given applies to the American plant, which differs slightly in color from the European. The disk in that species is said in *Sylloge* to always become whitish, a character not yet observed in our plant. In this the disk sometimes is red while the margin is yellow. The lamellae also, in drying, usually assume a subochraceous or pale cinnamon hue, which character is not attributed to the European plant. The edge of the lamellae is sometimes red near the margin of the pileus. The European plant is said to have the stem almost always stained or spotted with red. In ours it is more often white.

Russula rubra Fr.

RED RUSSULA

Pileus fleshy, hard, rigid, convex becoming nearly plane or centrally depressed, dry, polished, even on the obtuse sometimes wavy margin, very red, almost shining, often darker in the center, flesh white, reddish under the cuticle, taste acrid; lamellae rather close, adnate, broad, unequal, some of them forked, white becoming yellowish with age; stem hard, solid, white or red; spores white, globose or subglobose, .0003–.0004 of an inch long.

Pileus 2–4 inches broad; stem 2–3 inches long, 6–10 lines thick.

Woods. Albany, Madison, Rensselaer and Suffolk counties. July and August.

Distinguished from other members of this subgenus by its smooth polished pileus and its very acrid taste. Var. sapida Cke. (R. atropurpurea Krombh.) is said to be mild in flavor, but otherwise like the species. I have not seen it.

Russula squalida nom. nov.

SQUALID RUSSULA

Russula atropurpurea Pk. State Mus. Rep't 41. 1888. p. 75.

Pileus convex becoming centrally depressed, glabrous, dark purple, often blackish in the center, even or slightly striate on the margin when old, flesh white, grayish or grayish purple under the cuticle, taste mild, odor in drying fetid; lamellae subdistant, a few forked at the base, occasionally a short one intervening, white becoming yellowish, brownish where wounded; stem equal, glabrous, solid or spongy within, white, brownish where bruised; spores pale ochraceous with a salmon tint, subglobose, .0003–.0004 of an inch long, nearly as broad.

Pileus 3–4 inches broad; stem 2–3 inches long, 5–8 lines thick.

Margin of woods. Saratoga county. July.

In the dried state this russula has a peculiar dingy and unattractive appearance. It is very distinct in the unusual color of the spores and the brownish hue assumed where wounded. Agaricus atropurpurea Krombh. being a species of Russula, it becomes necessary to give a new name to the plant to which this specific name was formerly applied by me.

Russula ochrophylla Pk.

OCHERY GILLED RUSSULA

State Mus. Rep't 50. 1897. p. 100; State Mus. Mem. 3. 1900. p. 150, pl. 54 fig. 8–14.

Pileus firm, convex becoming nearly plane and umbilicate or centrally depressed, dry, unpolished, even on the margin, dark red or purplish red, often a little darker in the center, flesh white, red under the adnate cuticle, taste mild; lamellae subdistant, adnate, nearly entire, a few forked at the base, yellowish becoming bright ochraceous buff, dusted by the spores, the interspaces somewhat venose; stem equal or nearly so, solid or spongy within, reddish

but paler than the pileus; spores bright ochraceous buff, globose, .0004 of an inch broad.

Pileus 2–4 inches broad; stem 1.5–2.5 inches long, 6–10 lines thick.

Ground under oak trees. Albany county. July. Rare. Edible.

There is a var. albipes Pk. in which the pileus is deeper red and the stem white. If this mushroom is stewed in milk or cream without peeling, it imparts a pinkish purple hue to the liquid.

Russula mariae Pk.

MARY RUSSULA

State Mus. Rep't 24. 1872. p. 74; State Mus. Bul. 75. 1904. p. 29, pl. 85, fig. 1–8.

Pileus nearly hemispheric becoming broadly convex, plane or centrally depressed, dry, pruinose or minutely pulverulent, dark crimson or purplish, sometimes darker in the center than on the margin, rarely striate on the margin when old, flesh white, pinkish under the cuticle, taste mild or slightly and tardily acrid; lamellae rather close, adnate, white becoming yellowish with age; stem equal, solid or slightly spongy within, colored like or a little paler than the pileus, usually white at each end, rarely entirely white; spores pale yellow, globose, .0003 of an inch broad.

Pileus 1–3 inches broad; stem 1–2 inches long, 3–5 lines thick.

In woods and in open places. Common. July and August. Edible.

This species is easily distinguished by its pruinose or minutely granular cap. When moistened and rubbed on white paper it communicates reddish stains to it. A few of the lamellae are forked at the base. The pileus sometimes fades with age, specially in purplish specimens, and on the margin. Such specimens resemble Russula depallens (Pers.) Fr. as shown in Cooke's figure 1021.

Russula lactea (Pers.) Fr. is omitted; the specimens referred to it belong to Russula albella Pk.

Heterophyllae Fr.

Pileus fleshy, firm, with a thin viscid adnate pellicle and a thin, usually striate margin; lamellae unequal, some of them forked; stem stout, solid, spongy within.

The viscid pileus and striate margin separate this tribe from the preceding one; the firm pileus, adnate pellicle and unequal lamellae

separate it from the following one. Fries included in it a few species with the margin of the pileus even or obscurely striate.

KEY TO THE SPECIES

Pileus even or but slightly striate on the margin.....1
Pileus distinctly striate on the margin.....4
1 Taste mild.....2
1 Taste acrid.....consobrina
2 Lamellae distant.....earlei
2 Lamellae close.....3
3 Lamellae broad, rounded behind, white.....cyanoxantha
3 Lamellae rather narrow, whitish.....vesca
4 Pileus brown or brownish.....sororia
4 Pileus yellowish, reddish yellow or subochraceous.....5
5 Pileus roughened with granules.....granulata
5 Pileus smooth.....6
6 Pileus stramineous or subochraceous.....foetens
6 Pileus reddish yellow.....foetentula

Russula vesca Fr.

EDIBLE RUSSULA

Pileus fleshy, rather firm, nearly plane or centrally depressed, viscid, venosely rugulose or radiately wrinkled with a spreading, even margin, reddish or flesh color, darker in the center, flesh white, taste mild; lamellae thin, close, adnate, unequal, whitish; stem solid, compact, rigid, white; spores globose, white, .0003–.0004 of an inch broad.

Pileus 2–4 inches broad; stem 1–2 inches long, 4–8 lines thick.

Woods. Warren county. August. Rare.

The species may easily be recognized by the minutely radiately wrinkled or rugulose character of the upper surface of the pileus. The wrinkles or veins commonly radiate toward the margin but they often anastomose in a reticulate manner. In the typical form the pileus is pinkish or red flesh color. In our specimens it is mostly greenish, but darker or blackish green in the center where it is also in some specimens varied with reddish or brownish red hues. The European plant is edible as indicated by the name. I have not tested our plant.

Russula cyanoxantha (Schaeff.) Fr.

YELLOWISH BLUE RUSSULA

Pileus compact, convex becoming centrally depressed or subinfundibuliform, viscose, variable in color, even on the margin or

sometimes becoming slightly striate, purplish, lilac or olive-green, commonly becoming paler or yellowish in the center, flesh white, taste mild; lamellae broad, moderately close, rounded behind, pure white; stem spongy within, even, glabrous, white; spores subglobose, .0003–.0004 of an inch long, .00024–.0003 broad.

Pileus 2–4 inches broad; stem 2–3 inches long, 5–8 lines thick.

Woods. Albany and Washington counties. July. Not common.

The pileus is sometimes bluish on the margin and yellowish in the center, a character suggestive of the specific name, but not represented in any of our specimens. The flesh is sometimes reddish under the cuticle. The stem may become hollow in old specimens.

Russula earlei Pk.

EARLE RUSSULA

State Mus. Bul. 67. 1903. p. 24, pl. N, fig. 5–10.

Pileus fleshy, firm, hemispheric becoming broadly convex or nearly plane, sometimes centrally depressed, glabrous, very viscid, the margin even, stramineous becoming paler with age, flesh whitish or yellowish, taste mild; lamellae thick, distant, adnate, a few short, whitish becoming yellowish; stem short, firm, equal or nearly so, solid, becoming spongy within, white; spores white, subglobose, .0002–.00024 of an inch long.

Pileus 1.5–2.5 inches broad; stem 1–1.5 inches long, 3–5 lines thick.

Among fallen leaves in woods. Suffolk county. August.

This species is well marked by its pale and glutinous pileus, its distant lamellae and its small spores.

Russula consobrina Fr.

COUSIN RUSSULA

Pileus fleshy, convex or subhemispheric becoming centrally depressed, viscid, even on the membranaceous margin, gray, olive-brown or umber, flesh white, ashy gray under the pellicle, taste acrid; lamellae close, adnate, many forked and many short, white; stem firm, equal, spongy within, white becoming dingy or cinereous with age; spores white, subglobose, .0003–.0004 of an inch long, nearly as broad.

Pileus 2–4 inches broad; stem 1–3 inches long, 4–10 lines thick.

In woods. Otsego county. July. Rare.

Some of our specimens differ from the description in having a yellowish brown pileus.

Russula sororia Fr.

SISTER RUSSULA

Pileus convex becoming nearly plane, viscid when moist, striate on the thin margin, gray, grayish brown, olive-brown or yellowish brown, often darker in the center, flesh whitish, taste acrid; lamellae narrow, subdistant, adnate, many of them short, rarely forked, whitish or pallid, the interspaces venose; stem equal or slightly tapering upward, white; spores globose, white, .0003 of an inch broad.

Pileus 1–2.5 inches broad; stem 1–2 inches long, 4–8 lines thick.

Woods and groves. Albany and Suffolk counties. July to September.

Similar in color and character to R. consobrina Fr. of which it is thought by some to be a variety, but it is easily distinguished by its distinctly striate margin. R. pectinatoides Pk. resembles this in color but it may be distinguished from it by its mild or tardily and slightly acrid taste and its nearly equal lamellae.

A form with the pileus darker brown, flesh cinereous under the cuticle and stem becoming cinereous was found under chestnut trees near Ganševoort, Saratoga co. It is referable to R. consobrina intermedia Cke.

Russula granulata Pk.

GRANULATED RUSSULA

State Mus. Rep't 53. 1900. p. 843.

Pileus convex becoming nearly plane or centrally depressed, viscid when moist, rough with minute granules or squamules, tuberculate striate on the margin, dingy ochraceous or dingy yellow, tinged with red or brown, flesh white or whitish, taste acrid; lamellae thin, close, adnate, many forked at the base; stem equal or abruptly contracted at the top, glabrous, spongy within, whitish; spores white. subglobose, .0003 of an inch broad.

Pileus 2–3 inches broad; stem 1–1.5 inches long, 6–8 lines thick.

Woods. Ulster and Hamilton counties. August.

In State Museum Report 39, page 57 this was regarded as a variety of R. foetens Fr. from which it differs in its granular pileus, its closer and more narrow lamellae and in the absence of

odor. From R. granulosa Cke. it may be separated by its glabrous stem, smaller spores and adnate lamellae. R. granulata lepiotoides Atk. is a variety having the surface of the pileus rimose squamose.

Russula foetens (Pers.) Fr.

FETID RUSSULA

Pileus fleshy, fragile, subglobose or convex becoming plane or centrally depressed, viscid when moist, widely tuberculose sulcate or striate on the very thin margin, yellowish or dingy ochraceous, flesh pallid, taste acrid, odor strong, amygdaline; lamellae rather close, adnexed, unequal, some of them forked, whitish and often studded with drops of moisture when young, becoming yellowish with age, dingy where bruised, interspaces venose; stem short, stout, stuffed becoming irregularly hollow, white or whitish; spores white, subglobose, .0003–.0004 of an inch long, nearly or quite as broad.

Pileus 3–5 inches broad; stem 1.5–2.5 inches long, 6–12 lines thick.

Woods and bushy places. Common. July to September.

Readily recognized by its peculiar odor, acrid taste and widely striate margin. Gregarious in habit and somewhat variable in color.

Russula foetentula n. sp.

SLIGHTLY FETID RUSSULA

Pileus thin, nearly plane, viscid, glabrous, striate on the margin, reddish yellow, flesh white, taste tardily acrid, odor like that of almonds; lamellae thin, narrow, close, adnexed or nearly free, whitish, the interspaces venose; stem equal, firm, cavernous, white or yellowish white, usually spotted or stained with reddish brown at the base; spores very pale yellow, globose, .0003–.00035 of an inch broad.

Pileus 1.5–3 inches broad; stem 1–1.5 inches long, 3–5 lines thick.

Among fallen leaves in woods. Suffolk county. August.

This species is related to R. foetens Fr., to which it is similar in odor but from which it differs in its closer lamellae and reddish brown or burnt sienna color at the base of the stem.

The specimens reported in State Museum Report 35, page 135 under the name Russula heterophylla Fr. are doubtful and the species is therefore omitted.

Fragiles Fr.

Pileus fragile, covered with a thin separable or subseparable pellicle, viscid when moist, thin on the margin which is commonly striate or tuberculose striate in the mature plant; lamellae equal or nearly so, broader anteriorly; stem soft, spongy or hollow.

The fragile character of the pileus, the viscid separable pellicle, the thin and ultimately striate or tuberculose striate margin and the usually equal simple lamellae are the prominent distinguishing features of this subgenus. Its species outnumber those of any other subgenus of Russula. They may be divided into three groups depending on the color of the spores, which color is frequently indicated by the color of the mature lamellae. There are some exceptional or anomalous cases in which all the characters attributed to this tribe are not shown by species included in it. In some species the pileus is not viscid or the margin is not striate or the pellicle may be separable on the margin but not on the disk. The tuberculose character of the marginal striations is apparently due to the venose interspaces.

KEY TO THE SPECIES

Spores white or whitish.....1
Spores pale yellow or citrine.....10
Spores ochraceous.....20
1 Pileus red or reddish.....2
1 Pileus ochraceous or yellowish brown.....7
1 Pileus white or whitish.....8
2 Taste acrid.....3
2 Taste mild.....6
3 Pileus even.....4
3 Pileus rugulose.....rugulosa
4 Pileus darker colored in the center.....fallax
4 Pileus typically uniformly colored.....5
5 Lamellae rounded behind, subfree, subdistant.....emetica
5 Lamellae adnexed, close.....fragilis
6 Stem white or reddish.....uncialis
6 Stem red or deep red.....purpurina
7 Stem white.....pectinatoides
7 Stem pale ochraceous.....simillima
8 Taste acrid.....anomala
8 Taste mild.....9
9 Pileus dry.....albella
9 Pileus viscid.....albida
10 Pileus red or some shade of red.....11
10 Pileus some other color.....17
11 Taste acrid.....veternosa
11 Taste mild or slightly and tardily acrid.....12

12 Lamellae distant.....integra
12 Lamellae close.....13
13 Pileus more than 1 inch broad.....14
13 Pileus less than 1 inch broad.....pusilla
14 Stem and flesh becoming cinereous.....15
14 Stem and flesh not becoming cinereous.....16
15 Pileus red or orange.....decolorans
15 Pileus violaceous, purple or dark red.....obscura
16 Stem white, often with reddish stains.....palustris
16 Stem white with yellowish stains.....puellaris
17 Lamellae distant.....integra
17 Lamellae close.....18
18 Pileus yellow, even on the margin.....lutea
18 Pileus yellow, striate on the margin.....19
19 Stem white becoming cinereous.....constans
19 Stem persistently white.....flaviceps
20 Stem tinged with red by minute red granules.....roseipes
20 Stem not adorned with red granules.....21
21 Pileus distinctly striate on the margin.....22
21 Pileus slightly striate when old.....23
22 Lamellae pale yellow when mature.....abietina
22 Lamellae ochraceous when mature.....turci
23 Plant small, lamellae very close.....chamaeleontina
23 Plant large, lamellae subdistant.....alutacea

Russula emetica Fr.

EMETIC RUSSULA

Pileus fleshy, firm becoming fragile, convex becoming plane or centrally depressed, glabrous, viscid when moist, striate sulcate on the margin, rosy or blood-red, sometimes white or fading to white, flesh white, reddish under the separable pellicle, taste very acrid; lamellae equal, broad, subdistant, rounded behind and free or nearly so, white; stem solid or spongy within, elastic when young, becoming fragile, even, white or tinged with red; spores white, globose, .0003–.0004 of an inch broad.

Pileus 2–4 inches broad; stem 1.5–3 inches long, 3–6 lines thick.

Woods and swamps. Common. July to September.

This russula has a very acrid or peppery taste and is generally considered poisonous by European mycologists, but deemed edible and harmless by some American mycophagists. Thorough cooking probably destroys its harmful properties. I have not tried it.

Russula rugulosa Pk.

RUGULOSE RUSSULA

State Mus. Rep't 54. 1901. p. 179, pl. 72, fig. 12–18.

Pileus rather thin, fragile, convex becoming nearly plane or centrally depressed, viscid when moist, uneven with small tubercles and wrinkles, even on the margin when young, becoming tuberculose striate with age, the viscid pellicle separable on the margin, flesh white, reddish under the pellicle, taste acrid or tardily acrid; lamellae moderately close, adnate or slightly rounded behind, white; stem nearly equal, spongy within, white; spores white, subglobose, .0003–.0004 of an inch long, nearly or quite as broad.

Pileus 2–4 inches broad; stem 2–3 inches long, 4–8 lines thick.

Woods among mosses and fallen leaves. Franklin county. August and September. Edible.

Most closely allied to R. emetica Fr. from which it is distinguished by its rugulose pileus and less acrid or tardily acrid taste. The slight acridity is dispelled in cooking and it affords a harmless, tender and agreeable food. From R. vesca Fr. it may be distinguished by its tardily acrid taste and its striate margin.

Russula fallax (Schaeff.) Sacc.

FALLACIOUS RUSSULA

Pileus thin, fragile, convex or nearly or quite plane, viscid when moist, reddish with a darker center, flesh white, taste acrid; lamellae thin, adnexed, distant, whitish or pallid; stem slender, subequal, white; spores white, subglobose, .0003 of an inch long.

Pileus 1–2 inches broad; stem 1–2 inches long, 3–5 lines thick.

Moist places. Not rare. August.

This is R. emetica var. fallax Cke. and R. fragilis var. fallax Massee. We have followed Saccardo in recognizing its specific validity. In our specimens the lamellae appear to be less distant than in the typical form, but in other respects the agreement is good.

Russula fragilis (Pers.) Fr.

FRAGILE RUSSULA

Pileus very thin and fragile, convex becoming plane or slightly depressed in the center, with a thin pellicle somewhat viscid when moist, sometimes umbonate, tuberculose striate on the margin, polished, variable in color, typically pale red, sometimes fading to white,

flesh thin, white, not red under the separable pellicle, taste acrid; lamellae thin, close, adnexed, ventricose, sometimes slightly uneven or eroded on the edge, white; stem slender, spongy within or hollow, white; spores white, subglobose, .0003–.0004 of an inch long.

Pileus 1–2 inches broad; stem 1–1.5 inches long, 3–5 lines thick.

Woods and swamps. Not rare in hilly and mountainous wooded districts. July and August.

Var. nivea (Pers.) Cke. Whole plant white from the first. Rainbow, Franklin co. August.

The species is closely allied to R. emetica Fr. from which it may be separated by its smaller size, paler color, thinner flesh, white under the pellicle, and closer lamellae.

Russula uncialis Pk.

INCH WIDE RUSSULA

State Mus. Bul. 2. 1887. p. 10; State Mus. Bul. 116. pl. 107, fig. 7–12.

Pileus thin, convex becoming plane or centrally depressed, viscid when moist, glabrous or very minutely granulose, red or pinkish red, obscurely tuberculose striate on the margin, flesh white, taste mild; lamellae moderately close, narrowed toward the stem near which a few of them are forked, adnate or slightly emarginate, white becoming pallid, the interspaces venose; stem equal, glabrous, stuffed or spongy within, white or reddish; spores white globose, .0003–.00035 of an inch broad.

Pileus 1–1.5 inches broad; stem 1–1.5 inches long, 2–4 lines thick.

Woods. Rensselaer county. June and July. Rare.

It is unusual to find a red capped, white spored species of this subgenus with a mild taste. This and the next following species are our only examples of this kind.

Russula purpurina Q. & S.

PURPURINE RUSSULA

Pileus fleshy, fragile, subglobose becoming plane or slightly depressed in the center, sometimes cup-shaped by the upcurving of the margin, with a separable pellicle, acute and even or nearly so on the margin, deep red, flesh white, reddish under the pellicle, taste mild; lamellae moderately close, subequal, a little narrowed behind, white becoming yellowish with age or in drying; stem rather long, cylindric or sometimes slightly tapering above or below, stuffed or

spongy within, colored like the pileus or a little paler, sometimes whitish at the base; spores white, globose or subglobose, .0003–.0004 of an inch long, nearly or quite as broad.

Pileus 1.5–3 inches broad; stem 2–3 inches long, 4–6 lines thick.

Woods. Adirondack region. August and September.

The brilliant red color of the pileus and stem make this one of our most beautiful and attractive species of russula. The lamellae have a few short ones intermingled and the edge often appears floccose under a lens and red near the margin of the pileus. Pointed cystidia are numerous.

Russula pectinatoides Pk.

PECTENLIKE RUSSULA

PLATE 105, FIG. 6–10

Pileus thin, broadly convex becoming nearly plane or centrally depressed, viscid when moist, widely tuberculose striate on the margin, dingy straw color, brownish, yellowish brown or cinereous brown, sometimes darker in the center, flesh white, grayish white under the separable pellicle, taste mild or slightly and tardily acrid; lamellae thin, equal or with an occasional short one, some forked at the base, adnate, white becoming pallid; stem equal or nearly so, even, glabrous, spongy within, white; spores whitish, subglobose, .00025–.0003 of an inch long, nearly or quite as broad.

Pileus 1–3 inches broad; stem 1–2 inches long, 3–4 lines thick.

Grassy ground in groves and woods. Albany and Suffolk counties. July and August.

Specimens of this species were formerly reported as R. pectinata Fr. from which it seems best to separate them as they differ in their milder taste, the grayish color of the flesh under the cuticle, the adnate lamellae and the even stem. From R. sororia Fr. the species differs in its milder taste. In the character of the lamellae it is related to that species and might with almost equal propriety be placed in the same subgenus with it. It is edible.

Russula simillima Pk.

VERY SIMILAR RUSSULA

State Mus. Rep't 24. 1872. p. 75.

Pileus hemispheric or convex becoming plane or slightly depressed in the center, viscid when young or moist, striate on the

margin when mature, pale ochraceous, sometimes more highly colored in the center, flesh white, taste acrid; lamellae nearly equal, some forked near the stem, broader anteriorly, yellowish; stem equal or slightly tapering upward, spongy within, rarely hollow, colored like the pileus or a little paler; spores white, globose or nearly so, .0003 of an inch broad.

Pileus 1–3 inches broad; stem 2–3 inches long, 4–9 lines thick.

Woods. Adirondack region. August and September.

Related to R. ochroleuca (Pers.) Fr. and R. claroflava Grove but differing from both in having the stem pale ochraceous. It may be separated from R. ochracea (A. & S.) Fr. by its acrid taste and white flesh and spores. From R. fellea Fr. which it most closely resembles, the similarity justifying the specific name, it scarcely differs except in having the lamellae and stem pale ochraceous from the first, and the flesh white.

Russula anomala Pk.

ANOMALUS RUSSULA

State Mus. Rep't 50. 1897. p. 99.

Pileus thin, fragile, nearly plane or slightly depressed in the center, dry, striate on the margin, white, sometimes tinged with yellow, flesh white, taste acrid; lamellae thin, moderately close, adnate, equal or with an occasional short one, white, dusted with the white spores when dry; stem equal, solid or spongy within, white; spores subglobose, .0003–.00035 of an inch long, nearly or quite as broad.

Pileus 1–1.5 inches broad; stem 1–1.5 inches long, 3–4 lines thick.

Damp ground under trees. Suffolk county. July. Rare.

The anomalous character of this species is found in the pileus which is destitute of the viscid separable pellicle characteristic of this subgenus. Notwithstanding the absence of this character, the fragile pileus with its thin striate margin and the nearly equal lamellae point to this as its proper place in the genus. From R. fragilis nivea (Pers.) Cke. which it closely resembles it may be distinguished by its dry pileus, adnate lamellae and solid stem. Found but once.

Russula albida Pk.

WHITISH RUSSULA

State Mus. Bul. 2. 1887. p. 10; State Mus. Bul. 105. 1906. p. 38, pl. 96, fig. 1–7.

Pileus thin, fragile, hemispheric or very convex becoming nearly plane or slightly depressed in the center, slightly viscid when moist, white, often tinged with yellow in the center, even or slightly striate on the margin, flesh white, taste mild or slightly and tardily bitterish and unpleasant; lamellae thin, moderately close, entire, occasionally forked at the base, adnate or subdecurrent, white or whitish, the interspaces often venose; stem equal or slightly tapering upward, glabrous, stuffed or hollow, white; spores white or with a faint yellowish tinge, subglobose, .0003–.00035 of an inch long, nearly or quite as broad.

Pileus 1–2 inches broad; stem 1–3 inches long, 3–5 lines thick.

Among fallen leaves in woods. Rensselaer and Suffolk counties. July and August. Edible.

The slowly developed unpleasant taste of the fresh plant is lost in cooking. The thin margin of the cap is sometimes curved upward in old plants. Distinguished from R. lactea Fr., which it resembles in color, by its separable, slightly viscid pellicle, its adnate or subdecurrent closer lamellae and its stuffed or hollow stem. By the adnate lamellae and mild taste it may be distinguished from whitened forms of R. emetica Fr.

Russula albella Pk.

SLIGHTLY WHITE RUSSULA

State Mus. Rep't 50. p. 101.

Pileus thin, fragile, dry, plane or slightly depressed in the center, even or obscurely striate on the margin, white or whitish, sometimes tinged with pink or rose-red, specially on the margin, flesh white, taste mild; lamellae thin, close, equal, white; stem equal, solid or spongy within, white; spores white globose, .0003 of an inch broad.

Pileus 2–3 inches broad; stem 1–2 inches long, 3–4 lines thick.

Dry soil in woods. Suffolk county. July. Rare.

This species, like R. anomala Pk. departs from the usual character of the species of this subgenus in having a dry pileus. The fragile pileus and equal lamellae, however, indicate its close

relationship to this subgenus. From R. lactea Fr. it differs in its fragile texture, equal lamellae and the surface of the pileus not cracking and forming areolae.

Russula veternosa Fr.

LANGUISHING RUSSULA

Pileus convex becoming plane or centrally depressed, covered with a slightly viscid adnate pellicle, even on the margin, red or flesh-colored, typically becoming whitish or yellowish in the center, flesh white, taste acrid; lamellae narrow, broader in front, close, adnate, a few shorter ones intermingled, white becoming yellowish; stem equal, even, fragile, soft, spongy within becoming hollow, white; spores pale yellow, subglobose, .0003–.00035 of an inch long, nearly as broad.

Pileus 2–3 inches broad; stem 2–3 inches long, 5–8 lines thick. Thin woods. Saratoga county. August. Rare.

In our specimens the pileus is in some cases a little paler in the center than on the margin, but none of them is centrally whitish or yellowish as in the typical form. The red pileus with even margin, the acrid taste and pale yellow spores are distinguishing characters in this species.

Russula integra (L.) Fr.

ENTIRE RUSSULA

Pileus firm, becoming fragile, convex becoming plane or centrally depressed, covered with a viscid separable pellicle, thin on the margin which is at length coarsely tuberculose striate, variable in color, flesh white, taste mild; lamellae broad, nearly free, equal, distant, white becoming pale yellow, dusted by the spores; stem at first short, conic, becoming clavate, even, ventricose, sometimes cylindric, spongy within, white; spores pale yellow, subglobose, .0003–.0004 of an inch long, nearly or quite as broad.

Pileus 3–5 inches broad; stem 1.5–2.5 inches long, 6–12 lines thick. Woods. Adirondack region. July and August. Rare.

The specimens which we have referred to this species are dark red and do not always have the margin distinctly tuberculose striate. The stem is cylindric or sometimes thickened toward the base.

Var. rubrotincta Pk. Stem tinged with red. Otherwise as in the typical form.

Russula palustris Pk.

SWAMP RUSSULA

State Mus. Rep't 53. 1900. p. 842.

Pileus thin, fragile, subglobose or hemispheric becoming convex or nearly plane, viscid when moist and covered with a separable pellicle, obscurely tuberculose striate on the margin, reddish buff to purplish red, flesh white, tinged with reddish buff under the pellicle, taste tardily acrid; lamellae entire, moderately close, whitish becoming yellowish, interspaces venose; stem equal, glabrous, spongy within or hollow, fragile, white or tinged with red; spores pale yellow, subglobose, .0003–.0004 of an inch long, uninucleate.

Pileus 2–3 inches broad; stem 1.5–3 inches long, 4–6 lines thick.

Swamps, under alders. St Lawrence county. August. Rare.

Related to R. decolorans Fr. but smaller, thinner, more fragile, tardily acrid and not discoloring or assuming cinereous hues with age.

Russula decolorans Fr.

DISCOLORED RUSSULA

Pileus fleshy, firm, globose becoming plane or centrally depressed, slightly viscid when moist, polished, even on the margin, becoming striate with age, orange-red becoming paler with age, flesh white, becoming cinereous and variegated with black spots when broken, taste mild; lamellae thin, close, adnexed, fragile, sometimes forked at the base, white becoming yellowish; stem long, cylindric, solid or spongy within, white becoming cinereous, specially within; spores subglobose, yellowish, .0003–.0004 of an inch long, nearly as broad.

Pileus 2–4 inches broad; stem 2–4 inches long, 5–10 lines thick.

Woods. July to October. Not rare.

Russula obscura Rom.

OBSCURE RUSSULA

Pileus fleshy, convex becoming nearly plane, even on the margin or only slightly striate when old, dark red or purple sometimes blackish in the center, not becoming paler with age, subpruinose on the margin; lamellae, spores, size and stem as in R. decolorans.

Albany, Rensselaer and Suffolk counties. July and August.

The chief difference between this species and R. decolorans is found in the color of the pileus. This is variable but darker than in the typical form of that species and more persistent. The flesh and stem become cinereous or smoky brown.

Russula constans Karst.

CONSTANT RUSSULA

Pileus fleshy, convex becoming plane or nearly so, even or unequally striate on the margin, viscid, pale yellow, flesh white becoming gray with age; lamellae adnexed, whitish or pale yellow, becoming smoky brown or blackish in drying; stem white becoming ashy gray with age; spores, size of plant etc. as in R. decolorans Fr.

Woods. Adirondack region. August and September.

This and R. obscura agree with R. decolorans in their general characters, the most conspicuous difference between them and it being the color of the pileus. This character in many species is not thought to be of specific value, but in these plants the colors of the pilei appear to be constant, nor do they become intermingled on the same pileus as in other species with the pileus variously colored.

Russula puellaris Fr.

YOUTHFUL RUSSULA

Pileus thin, conic or convex becoming plane or slightly depressed, scarcely viscid, tuberculose striate on the margin, variable in color, livid, purplish or yellowish, darker or brownish in the center, flesh white, taste mild; lamellae thin, close, narrowed toward the stem, adnate, white becoming pale yellow; stem equal, soft, fragile, stuffed or hollow, white or yellowish; spores pale yellow, subglobose, .0004 of an inch long, .0003 broad.

Pileus 1–1.5 inches broad; stem 1–1.5 inches long, 2–4 lines thick.

Woods. Albany county. July. Rare.

Var. intensior Cke. Pileus deep purple, nearly black in the center, otherwise as in the typical form. Our specimens belong to this variety. The stem is white and shows no yellowish spots or stains.

Russula pusilla Pk.

SMALL RUSSULA

State Mus. Rep't 50. 1897. p. 99.

Pileus very thin, nearly plane or slightly and umbilicately depressed in the center, glabrous, slightly striate on the margin, the thin pellicle separable, red, sometimes a little darker in the center, flesh white, taste mild; lamellae broad, subventricose, subdistant, adnate, or slightly rounded behind, white becoming yellowish ochraceous with age or in drying; stem short, soft, solid or spongy within, white; spores yellowish, globose, .0003 of an inch broad.

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E B Stuhy 11 61st 1908 " 138 plate 110 fig 7-11

Pileus scarcely 1 inch broad; stem 6–12 lines long, 2–3 lines thick.

Naked ground in woods. Suffolk county. July. Rare.

This is the smallest russula known to me. The coloring matter of the pileus produces red stains on moist paper when the pileus is rubbed over the paper.

Russula flaviceps Pk.

YELLOW CAP RUSSULA

State Mus. Rep't 53. 1900. p. 843.

Pileus convex or centrally depressed, glabrous, covered with a thin viscid separable pellicle, even on the margin when young, slightly tuberculose striate when old, pale yellow, flesh white, taste mild or slightly acrid; lamellae close, narrow, adnate or slightly rounded behind, pale yellow becoming more yellow and dusted by the spores with age; stem equal or nearly so, stuffed or spongy within, white; spores yellow, subglobose, .0003 of an inch long.

Pileus 2–4 inches broad; stem 1.5–2.5 inches long, 4–8 lines thick.

Woods. Sullivan county. August. Rare.

Distinguished from R. citrina Gill. and R. fingibilis Britz. by its yellow lamellae, and from R. lutea Fr. by its striate margin and paler yellow lamellae and spores.

Russula lutea (Huds.) Fr.

YELLOW RUSSULA

Pileus thin, rather firm, convex becoming plane or centrally depressed, viscid when moist, even on the margin, beautifully yellow becoming paler with age, flesh white, taste mild; lamellae narrow, close, free, equal, bright ochraceous; stem equal or tapering upward, soft, stuffed or hollow, white; spores yellow, globose or subglobose, .0003–.0004 of an inch long, nearly or quite as broad.

Pileus 1–2 inches broad; stem 1–2 inches long, 3–5 lines thick.

Woods. Essex county. August. Rare. This pretty species has been found by me but once.

Russula roseipes (Secr.) Bres.

ROSY STEM RUSSULA

Pileus thin, convex becoming plane or slightly depressed in the center, slightly viscid, soon dry, slightly striate on the thin margin, reddish flesh color, rosy red or rosy orange, flesh white or yellowish, taste mild; lamellae equal, close, sometimes forked near the stem, free or adnexed, with a decurrent tooth, whitish becoming yellow; stem equal or tapering upward, stuffed or cavernous, reddish or

white stained with red; spores globose, pale ochraceous, .0003–.0004 of an inch long.

Pileus 1–1.5 inches broad; stem 1–2 inches long, 3–5 lines thick.

Woods. Albany and Saratoga counties. July.

This is by some considered a variety of R. puellaris Fr. The red color of the stem when viewed under a lens is seen to be due to minute red particles or a rosy mealiness.

Russula abietina Pk.

FIR TREE RUSSULA

State Mus. Rep't 54. 1901. p. 180, pl. 7, fig. 1–11.

Pileus thin, fragile, convex becoming plane or slightly depressed in the center, covered with a viscid separable pellicle, tuberculose striate on the thin margin, variable in color, purplish, greenish purple or olive-green with a brown or blackish center, or sometimes purplish with a greenish center, flesh white, taste mild; lamellae narrowed toward the stem, subdistant, equal, rounded behind and nearly free, ventricose, whitish becoming pale yellow; stem equal or tapering upward, stuffed or hollow, white; spores bright yellowish ochraceous, subglobose, .0003–.0004 of an inch long, nearly or quite as broad.

Pileus 1–2.5 inches broad; stem 1–2.5 inches long, 3–5 lines thick.

Under balsam fir trees. Essex county. July and August. Edible.

The species is closely related to R. turci Bres. from which I have separated it because of its paler lamellae and the absence of cystidia from the lamellae and of minute areolae from the pileus and because of the presence of greenish and olive-green colors in the pileus. Its place of growth is only under balsam fir trees, Abies balsamea (L.) Mill., so far as it has been observed.

Russula turci Bres.

TURC RUSSULA

Pileus fleshy, thin, convex becoming plane or centrally depressed, viscid, striate on the margin when mature, reddish violaceous or lilac-purple, darker or blackish in the center, sometimes becoming yellowish in age and minutely areolate, flesh white or whitish, taste mild; lamellae equal, subclose, rounded behind, free, pallid when young, soon ochraceous, interspaces venose; stem equal or tapering upwards, rugulose, soon cavernous or hollow, fragile, white; spores ochraceous, globose, echinulate, .0003–.00035 of an inch in diameter.

Pileus 1.5–3 inches broad; stem 1.5–3 inches long, 3–6 lines thick.

Gregarious; in pine woods. Albany county. October.

The specimens referred to this species were formerly thought to belong to Russula nitida (Pers.) Fr. but they agree much more closely with the description of this more recently described russula, from which they can scarcely be specifically distinct. The plant differs from R. nitida in having no well marked odor and in having neither the pileus nor the lamellae shining. Cystidia are present but they are slightly shorter than in the typical form of R. turci.

Russula chamaeleontina Fr.

CHAMELEON RUSSULA

Pileus thin, fragile, plane or slightly depressed in the center, covered with a viscid separable pellicle, even on the margin, when young, becoming slightly striate with age, variable in color, pinkish or rose-red, purplish or lilac, becoming yellow in the center or wholly yellowish, flesh white, taste mild; lamellae thin, close, narrow, adnexed or free, sometimes forked, yellow; stem slender, slightly striate, somewhat hollow, white; spores ochraceous, globose, .0003 of an inch broad.

Pileus 1–2 inches broad; stem 1–2 inches long, 2–3 lines thick.

Woods. Saratoga and Albany counties. July and August.

Russula alutacea Fr.

TAN COLORED RUSSULA

Pileus fleshy, convex becoming plane or centrally depressed, covered with a viscid pellicle, even on the margin when young, becoming more or less tuberculose striate when old, variable in color, red, bright blood-red, dark purple, olivaceous or green, flesh white, taste mild; lamellae thick, broad, equal, subdistant, rounded behind, pale yellow becoming ochraceous tinged with tan color, naked, stem stout, solid, spongy within, even, white or red; spores ochraceous yellow, subglobose, .0003–.0005 of an inch long, .0003–.0004 broad.

Pileus 2–4 inches broad; stem 1–2.5 inches long, 6–12 lines thick.

Woods and groves. July and August. Common.

A large fine species considered edible but I have not tried it. The color of the pileus is so variable that the species is not always readily recognized. From R. integra, which is also variable in the color of the pileus, it may be separated by the naked lamellae and the ochraceous color of the spores.

EXPLANATION OF PLATES

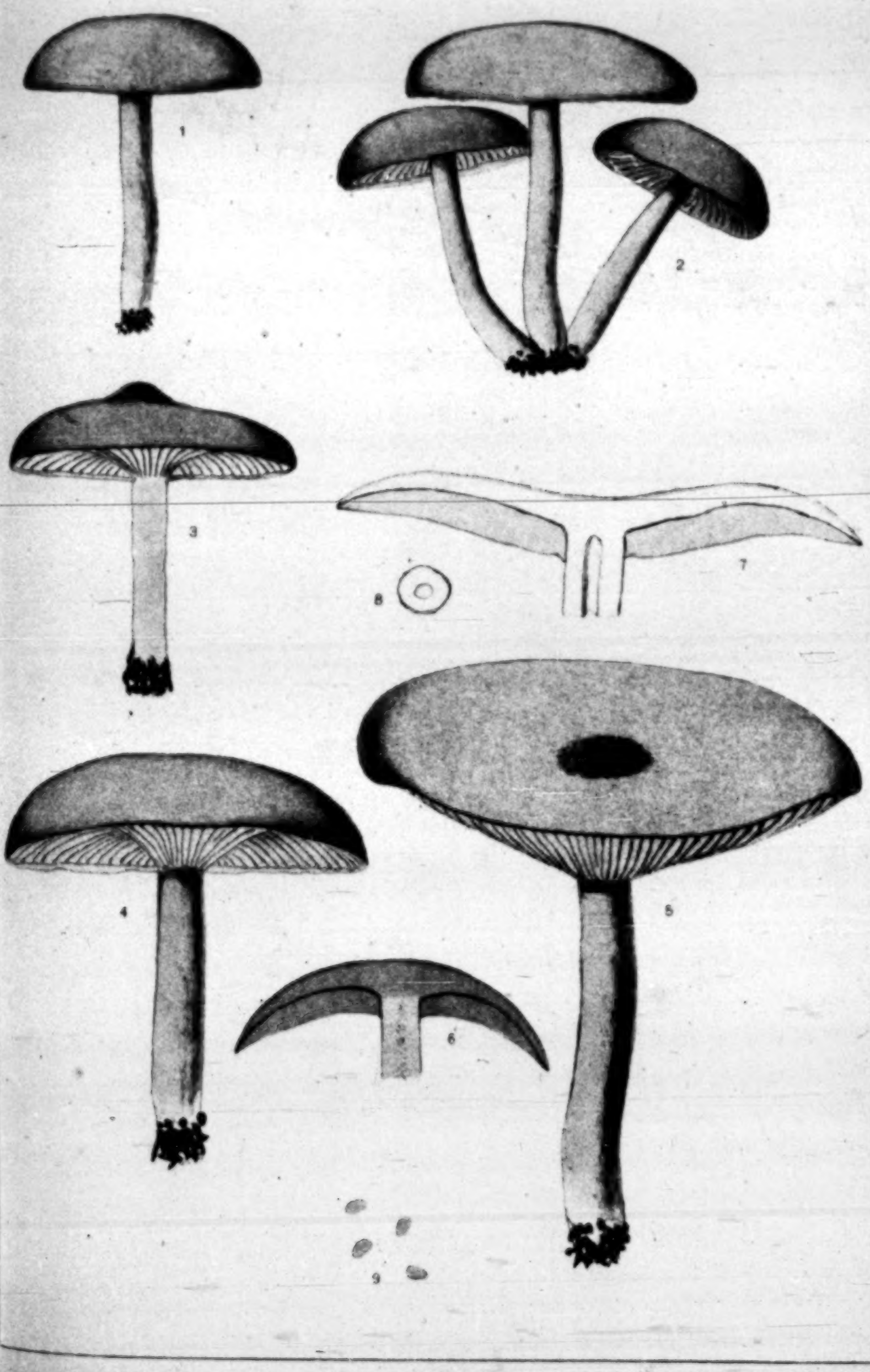
PLATE 104

Tricholoma nudum (Bull.) Fr.

NAKED TRICHOLOMA

1 Young plant
2 Cluster of three young plants
3 Young plant with umbonate cap
4 Mature plant with convex cap
5 Mature plant with plane cap
6 Vertical section of young cap and upper part of stem
7 Vertical section of mature cap and upper part of stem
8 Transverse section of a stem
9 Four spores, x 400

EDIBLE FUNGI



TRICHOLOMA NUDUM (BULL.) FR.

NAKED TRICHOLOMA

PLATE 105

Tricholoma hirtellum Pk.

HAIRY CAP TRICHOLOMA

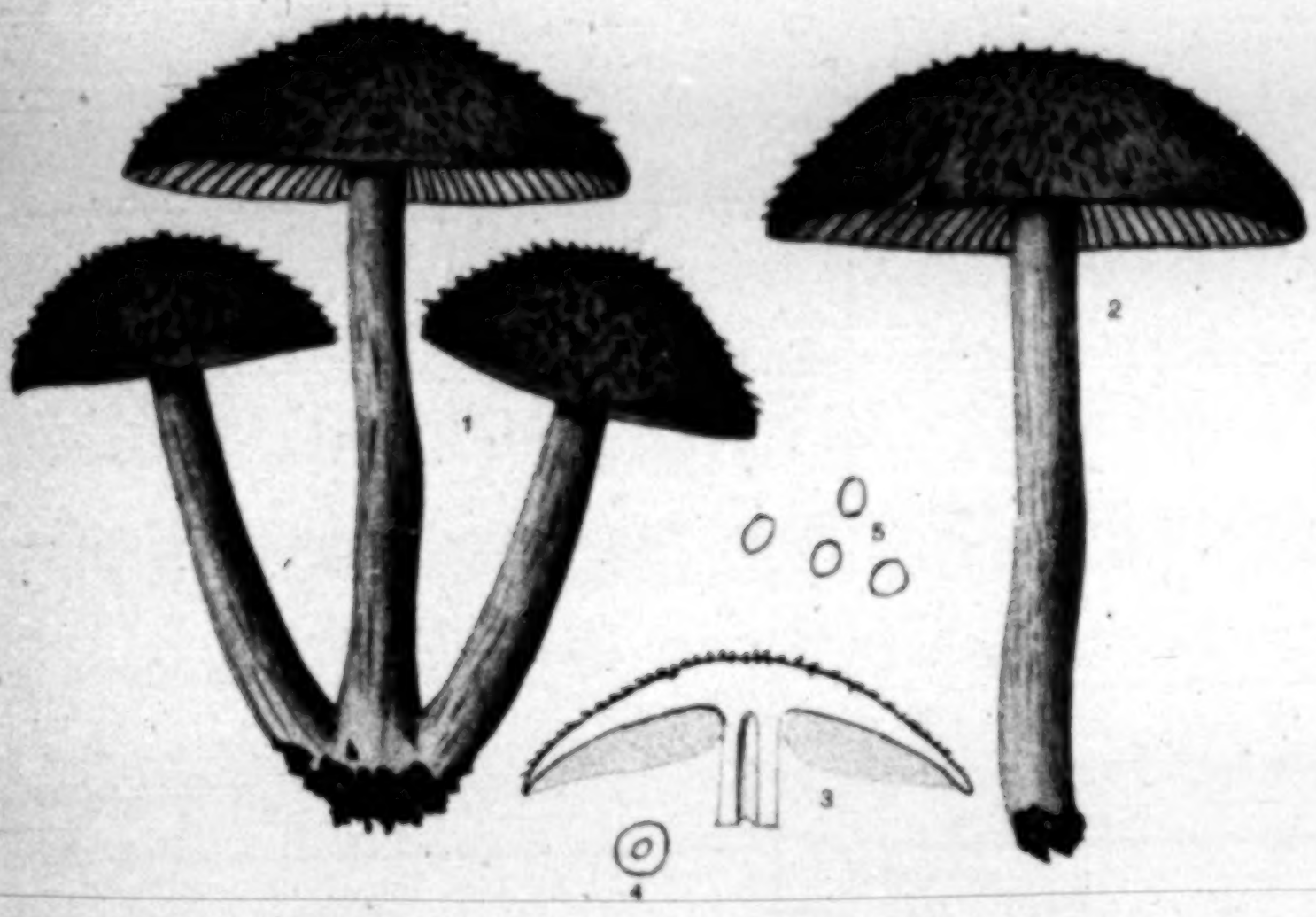
1 Cluster of three plants
2 Single plant
3 Vertical section of cap and upper part of stem
4 Transverse section of stem
5 Four spores, x 400

Russula pectinatoides Pk.

PECTENLIKE RUSSULA

6 Plant with convex cap
7, 8 Two plants with caps fully expanded
9 Vertical section of cap and upper part of stem
10 Four spores, x 400

EDIBLE FUNGI



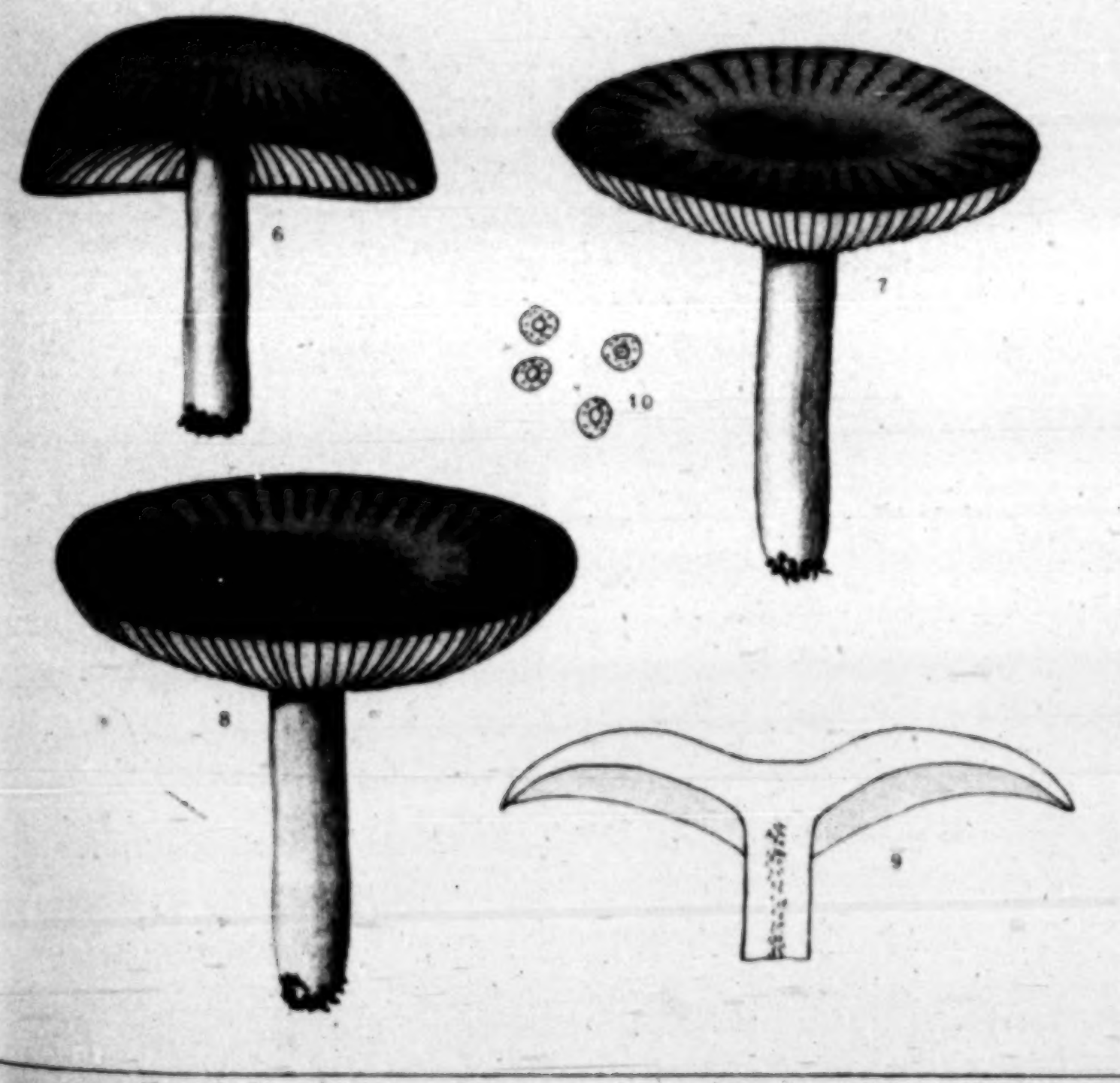


FIG. 1–5.
TRICHOLOMA HIRTELLUM PK.
HAIRY CAP TRICHOLOMA

FIG. 6–10.
RUSSULA PECTINATOIDES PK.
PECTENLIKE RUSSULA

PLATE 106

Clitocybe amethystina (Bolt.)

AMETHYST CLITOCYBE

1 Young plant with moist cap
2 Plant with cap moist on the margin
3 Plant with dry cap
4 Vertical section of young cap and upper part of stem
5 Vertical section of mature plant and upper part of stem
6 Four spores, x 400

Clitocybe ochropurpurea Berk.

PURPLE GILLED CLITOCYBE

7, 8 Small plants with moist caps
9 Plant medium size with dry cap
10 Vertical section of cap and upper part of stem
11 Four spores, x 400

EDIBLE FUNGI

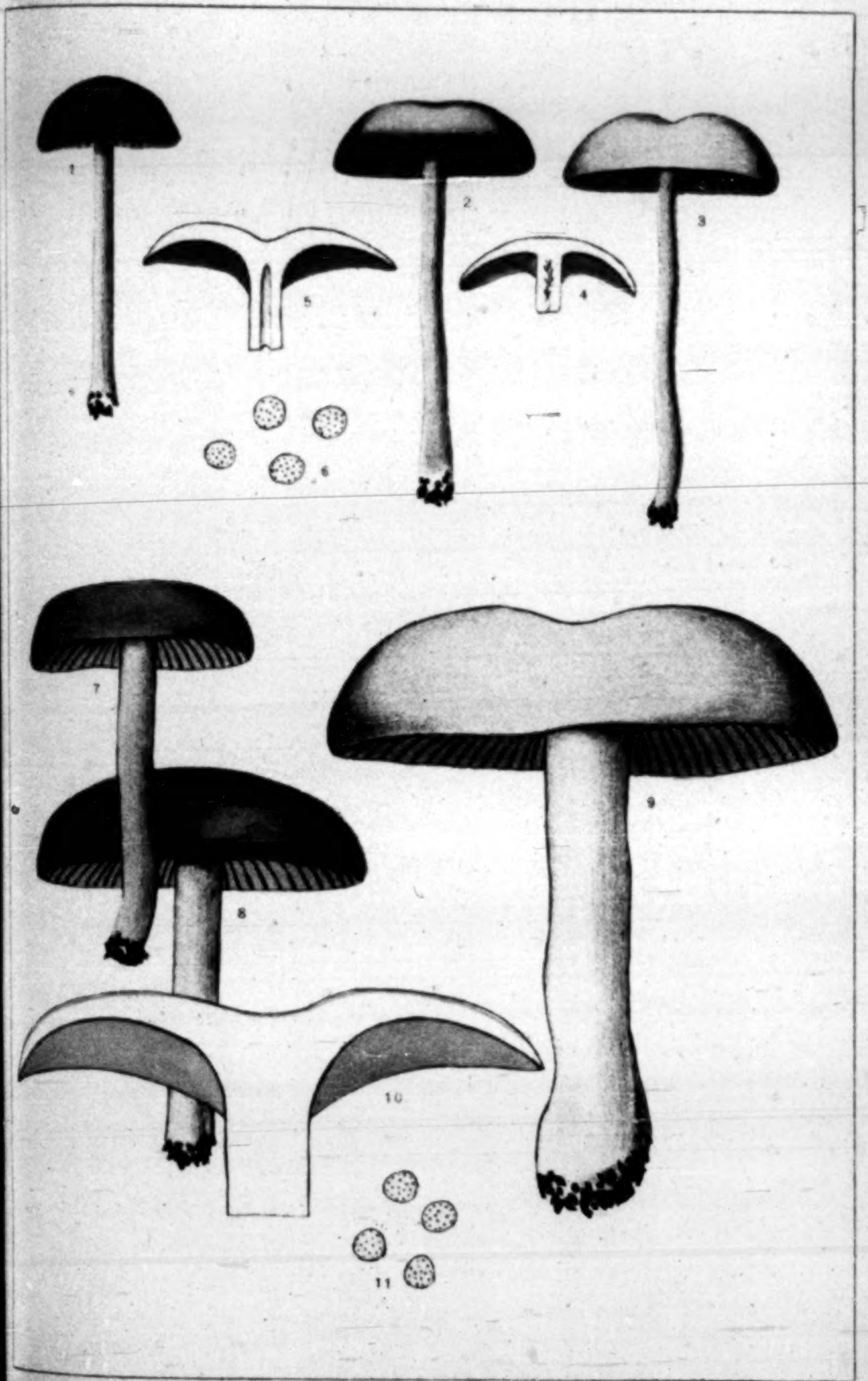


FIG. 1-6.
CLITOCYBE AMETHYSTINA (BOLT.)
AMETHYST CLITOCYBE

FIG. 7-11.
CLITOCYBE OCHROPURPUREA BERK.
PURPLE GILLED CLITOCYBE

PLATE 107

Agaricus micromegethus Pk.

SMALL MUSHROOM

1 Small plant
2 Plant of medium size showing color of young gills
3 Cluster of three plants, two of them large
4 Vertical section of young cap and upper part of stem
5 Vertical section of mature cap and upper part of stem
6 Four spores, x 400

Russula uncialis Pk.

INCH WIDE RUSSULA

7, 8 Two young plants with convex caps
9 Mature plant with expanded cap
10 Vertical section of young cap and upper part of stem
11 Vertical section of mature cap and upper part of stem
12 Four spores, x 400

EDIBLE FUNGI

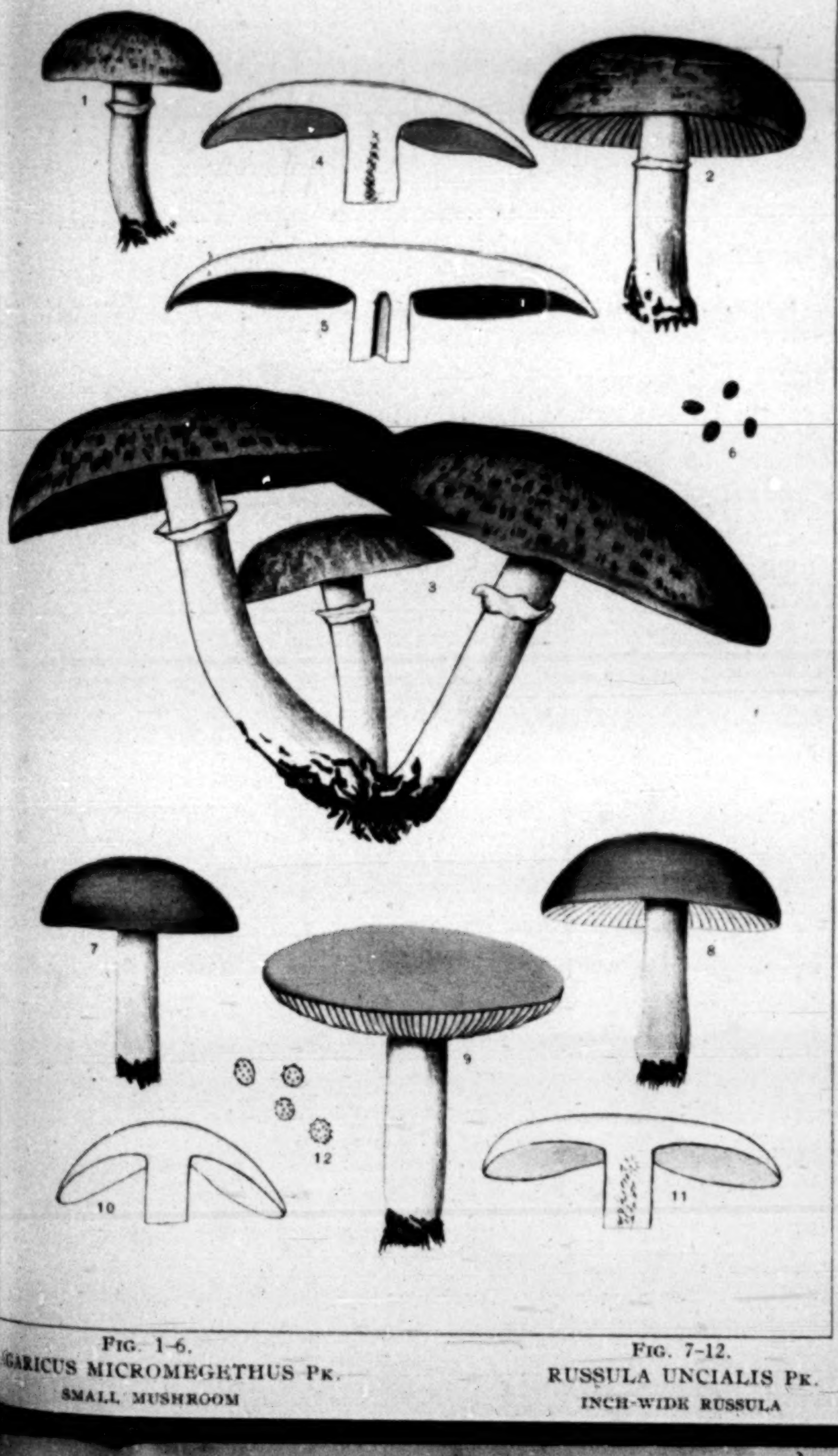


FIG. 1–6.
AGARICUS MICROMEGETHUS PK.
SMALL MUSHROOM

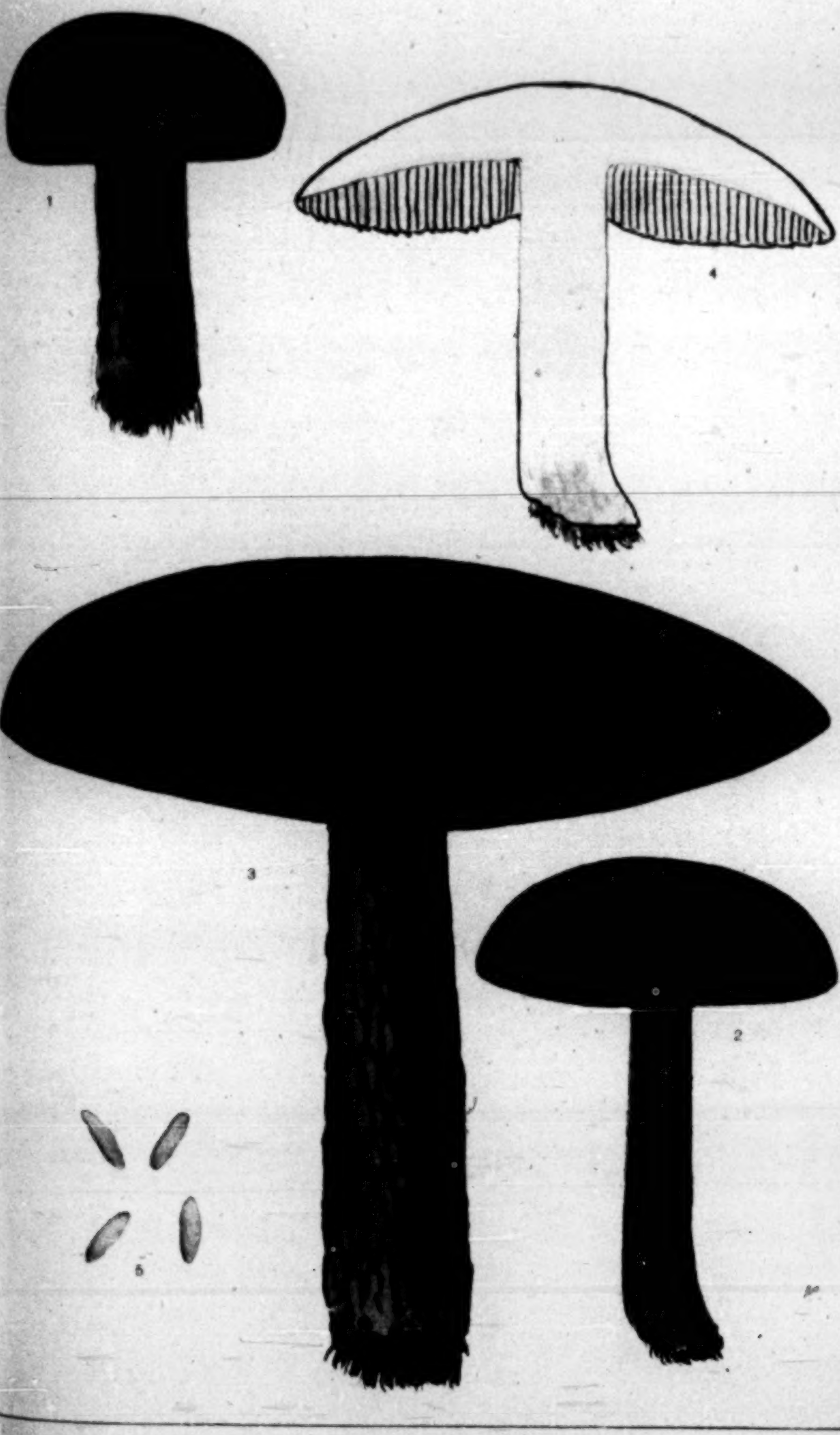
FIG. 7–12.
RUSSULA UNCIALIS PK.
INCH-WIDE RUSSULA

PLATE 108

Boletus frostii Russ.

FROST BOLETUS

1 Young plant
2 Small mature plant
3 Mature plant of medium size
4 Vertical section of cap and stem
5 Four spores, x 400



BOLETUS FROSTII Russ.

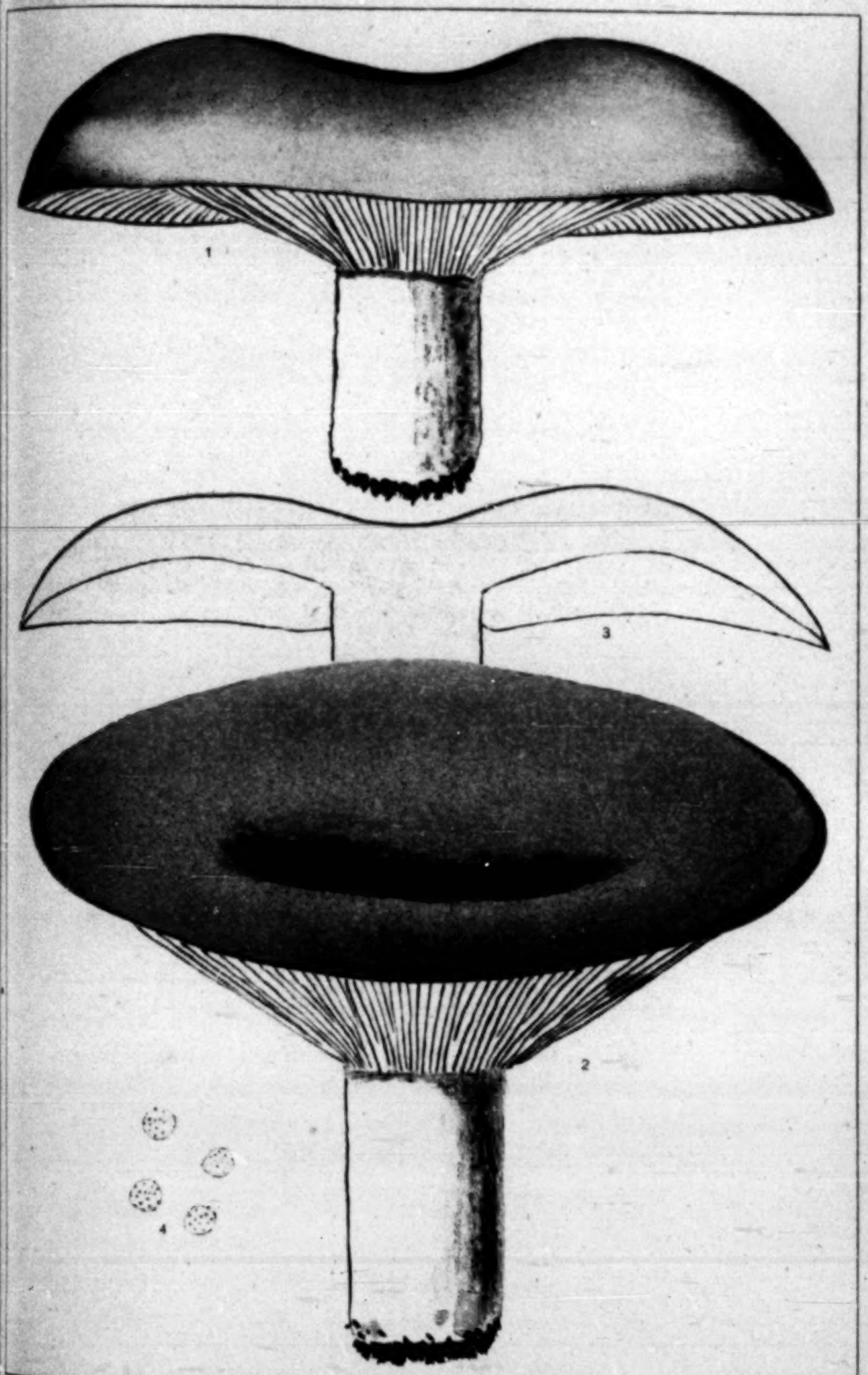
FROST BOLETUS

PLATE 109

Russula compacta Frost

COMPACT RUSSULA

1 Young plant with convex cap with whitish margin
2 Mature plant with expanded centrally depressed cap
3 Vertical section of cap and upper part of stem
4 Four spores, x 400



RUSSULA COMPACTA FROST.

COMPACT RUSSULA

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New York State Museum

JOHN M. CLARKE, Director

Museum bulletin 122

1907

REPORT OF THE STATE BOTANIST 1907

Dr John M. Clarke, Director of the State Museum:

I have the honor of submitting to you my report of work done in the botanical department of the State Museum during the year 1907.

Specimens of plants have been collected in the counties of Albany, Greene, Herkimer, Jefferson, Oneida, Onondaga, Putnam, Rensselaer, Saratoga and Steuben.

Specimens of plants have been contributed by correspondents and others which were collected in the counties of Albany, Essex, Franklin, Herkimer, Monroe, New York, Onondaga, Ontario, Orleans, Richmond, Seneca, Steuben, Tompkins, Ulster, Warren and Washington.

The number of species of which specimens have been added to the herbarium is 203. Of these, 82 are new to the herbarium, 121 are not. Of those new to the herbarium, 45 are new species, 38 being species of Crataegus, 7 of fungi. A list of the names of the added species is given under the caption, "Species added to the herbarium."

The number of those who have contributed specimens is 72. This includes those who have contributed specimens of extralimital species and also those who have sent specimens for identification merely, if the specimens were rare or if for any other reason they were considered desirable or worthy of preservation. A list of the names of contributors and of their respective contributions is given under the heading "Contributors and their contributions." Under the heading, "Species not before reported" may be found the

names of species added to our flora, with localities, remarks and descriptions of new species, except in species of the genus Crataegus. Localities and descriptions of new species of these are given in the three papers on this subject in another part of the report. These papers have been prepared and kindly contributed by the eminent and expert dendrologist, Prof. C. S. Sargent. Unfortunately many of these species are not represented in our collection by specimens and can not yet be counted as additions to the herbarium. The whole number of species of this genus added to our flora is 88, making the number of New York species of this genus now known 185. But specimens of nearly all the new species credited to Coopers Plains and vicinity have been collected by the writer, and with the specimens contributed by Mr G. D. Cornell, these species are with one or two exceptions all now represented in the herbarium.

The past season, in its relation to the mushroom crop has been very similar to that of 1906. Early in the season there were sufficient rains but cool weather. These conditions were followed by a long period of dry weather unfavorable to the mushroom growth, and crowding it into a short period late in the season. The number of species whose edible qualities have been tried and approved is 8. These have been illustrated on five plates and described as in the plan followed in the preceding report. The whole number of New York edible species now illustrated is 191. The number of plates illustrating them and the poisonous and unwholesome species is 114.

A revision has been made of the New York species of the somewhat difficult genus Pholiota. The number of species now recognized as belonging to it is 32. Revised descriptions of these have been written and a key prepared to facilitate the tracing of the species to their respective descriptions.

The number of those seeking information from the botanical department concerning the identity of plants or their character is 117. The number of identifications made is 891.

My assistant, Mr Stewart H. Burnham, has disinfected the collections of 1906 which needed such treatment, labeled and arranged them in their proper places, assisted in conducting the correspondence of the office, in the identification of specimens of inquirers and in giving them the desired information. He has prepared a typewritten catalogue of the species of fungi described by the State Botanist, and made a typewritten copy of the present report.

Respectfully submitted

CHARLES H. PECK
State Botanist

Albany, December 31, 1907

SPECIES ADDED TO THE HERBARIUM

New to the herbarium

Ajuga reptans *L.*
Biatora prasina *Fr.*
Biatorella simplex (*Dav.*) *B. & R.*
Boletus niveus *Fr.*
Centaurea solstitialis *L.*
Cetraria glauca (*L.*) *Ach.*
Chaetomium sphaerospermum *C. & E.*
Cladonia bacillaris (*Del.*) *Nyl.*
Clitocybe subcyathiformis *Pk.*
Clitopilus subplanus *Pk.*
Crataegus acerba *S.*
C. affinis *S.*
C. amoena *S.*
C. anomala *S.*
C. barryana *S.*
C. bella *S.*
C. claytoniana *S.*
C. comans *S.*
C. cornellii *S.*
C. desueta *S.*
C. dewingii *S.*
C. dissociabilis *S.*
C. diversa *S.*
C. floridula *S.*
C. frutescens *S.*
C. fucata *S.*
C. gracilis *S.*
C. ignea *S.*
C. inopinata *S.*
C. insignata *S.*
C. inusitula *S.*
C. limosa *S.*
C. macrocalyx *S.*
C. nescia *S.*
C. numerosa *S.*
C. ovatifolia *S.*
C. pellecta *S.*
C. plana *S.*
C. ramosa *S.*
C. recta *S.*
C. repulsans *S.*
Crataegus rubrolutea *S.*
C. singularis *S.*
C. spatifolia *S.*
C. spinifera *S.*
C. spissa *S.*
C. steubenensis *S.*
C. structilis *Ashe*
C. suavis *S.*
C. suborbiculata *S.*
C. uncta *S.*
C. verrucalis *Pk.*
Cronartium ribicola *Dietr.*
Diaporthe parasitica *Murr.*
Flammula pulchrifolia *Pk.*
Galium erectum *Huds.*
Hygrophorus coloratus *Pk.*
H. lacmus *Fr.*
Hypocrea polyporoidea *B. & C.*
Lactarius minusculus *Burl.*
Leaia piperata *Banker*
Lecidea platycarpa *Ach.*
Lophiotrema semiliberum (*Desm.*)
Lotus corniculatus *L.*
Metzgeria conjuncta *Lindb.*
Monilia crataegi *Diedicke*
Myxosporium necans *Pk.*
Nolanea suaveolens *Pk.*
Parmelia cetrata *Ach.*
P. perforata (*Jacq.*) *Ach.*
Pholiota duroides *Pk.*
Physcia hypoleuca (*Muhl.*) *Tuck.*
Polyporus sp aguei *B. & C.*
Polystictus montagnei *Fr.*
Rinodina oreina (*Ach.*) *Mass.*
Russula aeruginea *Fr.*
Sphaeropsis lyndonvillae *Sacc.*
S. persicae *E. & B.*
Stereocaulon coralloides *Fr.*
Stropharia bilamellata *Pk.*
Trentepohlia umbrina (*Kütz.*) *Born.*
Tubercularia davisiana *Sacc. & Trav.*
Viola vagula *Greene*

Not new to the herbarium

Aecidium clematidis *DC.*
Ae. grossulariae (*Gmel.*) *Schum.*
Agaricus arvensis *Schaeff.*
Alsine longifolia (*Muhl.*) *Britton*
Amanita caesarea *Scop.*
A. formosa *G. & R.*
A. phalloides *Fr.*
A. rubescens *Fr.*
Amanitopsis farinosa (*Schw.*)
A vaginata (*Bull.*) *Rose*
Aronia nigra (*Willd.*) *Britton*
Aster divaricatus *L.*
A. panic. bellidiflorus (*Willd.*)
Blitum capitatum *L.*
Boletus albocarneus *Pk.*
B. castaneus *Bull.*
B. chromapes *Frost*
B. clintonianus *Pk.*
B. elbensis *Pk.*
B. nebulosus *Pk.*
B. ravenelii *B. & C.*
B. subaureus *Pk.*
B. subtomentosus *L.*
Calvatia elata (*Mass.*) *Morg.*
Cantharellus cibarius *Fr.*
C. cinnabarinus *Schw.*
C. floccosus *Schw.*
C. minor *Pk.*
Carya amara *Nutt.*
C. glabra odorata *Sarg.*
Castanea dentata *Borkh.*
Chrysanthemum leucanthemum *L.*
Clitocybe amethystina (*Bolt.*)
C. candicans *Fr.*
C. laccata (*Scop.*) *Fr.*
Clitopilus caespitosus *Pk.*
Collybia acervata *Fr.*
C. dryophila (*Bull.*) *Fr.*
C. lacunosa *Pk.*
C. platyphylla *Fr.*
Conringia orientalis (*L.*) *Dum.*
Cortinarius torvus *Fr.*
Crataegus bissellii *S.*
C. uniflora *Muench.*
Cypripedium arietinum *R. Br.*
Cystopus amaranthi *Berk.*
Dasystoma virginica (*L.*) *Britton*
Deconica bullacea *Bull.*
Dryopteris goldieana (*Hook.*) *Gray*
Eleocharis ovata (*Roth*) *R. & S.*
Erysimum cheiranthoides *L.*
Erysiphe polygoni *DC.*
Euphorbia polygonifolia *L.*
Flammula lubrica *Fr.*
Fraxinus lanceolata *Borck.*
F. pennsylvanica *Marsh.*
Fuligo ovata (*Schaeff.*) *Macb.*
Fusisporium destruens *Pk.*
Galium mollugo *L.*
Habenaria blephariglottis (*Willd.*)
H. ciliaris (*L.*) *R. Br.*
Helotium citrinum (*Hedw.*) *Fr.*
Helvella infula *Schaeff.*
Hydnum fennicum *Karst.*
H. septentrionale *Fr.*
Hygrophorus borealis *Pk.*
H. ceraceus *Fr.*
H. coccineus (*Schaeff.*)
H. marginatus *Pk.*
H. pratensis (*Pers.*) *Fr.*
Hypholoma candolleanum *Fr.*
H. capnoides *Fr.*
H. incertum *Pk.*
H. subaquilum *Banning*
H. sublateritium (*Schaeff.*)
Lactarius camphoratus *Fr.*
L. insulsus *Fr.*
L. oculatus (*Pk.*) *Burl.*
L. subdulcis *Fr.*
L. varius *Pk.*
Lentinus spretus *Pk.*
Lenzites sepiaria *Fr.*
Lepiota acerina *Pk.*
Lycoperdon gemmatum *Batsch*
L. glabellum *Pk.*
L. subincarnatum *Pk.*
Marasmius glabellus *Pk.*
M. minutus *Pk.*
M. subnudus (*Ellis*) *Pk.*
Mycena rosella *Fr.*
Panus torulosus *Fr.*
Paxillus involutus *Batsch*
Phlebia radiata *Fr.*
Pholiota aggericola *Pk.*

Pholiota caperata *Fr.*
P. discolor *Pk.*
P. praecox *Pers.*
Polyporus adustus *Willd.*
P. betulinus *Fr.*
P. caesius *Fr.*
P. cuticularis (*Bull.*) *Fr.*
Polystictus biformis *Klotz.*
P. pergamenus *Fr.*
Psilocybe conissans *Pk.*
Puccinia andropogonis *Schw.*
P. coronata *Cd.*
Russula crustosa *Pk.*
Russula decolorans *Fr.*
R. emetica *Fr.*
R. fallax *Fr.*
R. obscura *Rom.*
R. ochrophylla *Pk.*
R. pectinatoides *Pk.*
R. squalida *Pk.*
R. uncialis *Pk.*
R. variata *Banning*
R. virescens *Schaeff.*
Salix serissima (*Bail.*) *Fern.*
Thelephora palmata (*Scop.*) *Fr.*
Tricholoma personatum *Fr.*
T. vaccinum *Pers.*

CONTRIBUTORS AND THEIR CONTRIBUTIONS

Miss H. C. Anderson, Lambertville, N. J.

Russula vesca *Fr.*
Sclerotinia tuberosa (*Hedw.*) *Fckl.*

Miss G. S. Burlingham, Mexico

Lactarius aspideoides *Burl.*
L. bensleyae *Burl.*
Lactarius circellatus (*Batt.*) *Fr.*
Peckiella hymenioides *Pk.*

Mrs E. B. Blackford, Boston, Mass.

Boletus gracilis laevipes *Pk.*
Omphalia serotina *Pk.*

Miss M. C. Burns, Middleville

Cantharellus floccosus *Schw.*

Mrs G. M. Dallas, Philadelphia, Pa.

Oxydendrum arboreum (*L.*) *DC.*

Mrs H. C. Davis, Falmouth, Me.

Helvella infula *Schaeff.*

Mrs L. L. Goodrich, Syracuse

Chrysanthemum leucantheum tubuliforme (*Tenney*)

Mrs C. W. Harris, Brooklyn

Biatora chlorantha *Tuck.*
B. laureri (*Hepp.*) *Tuck.*
Cetraria ciliaris (*Ach.*) *Tuck.*
C. glauca (*L.*) *Ach.*
C. lacunosa *Ach.*
C. oakesiana *Tuck.*
Cladonia bacillaris (*Del.*) *Nyl.*
C. caespiticia (*Pers.*) *Flk.*
C. cristatella *Tuck.*
C. delicata (*Ehrh.*) *Fr.*
C. fimb. coniocraea (*Flk.*)
C. fimb. tubaeformis *Fr.*

Cladonia furcata (*Huds.*) *Schrod.*
C. furc. paradoxa *Wainio.*
C. grac. dilatata (*Hoffm.*)
C. pyx. chlorophaea (*Spreng.*)
C. pyx. neglecta (*Flk.*)
C. rangiferina (L.) *Hoffm.*
C. turgida (*Ehrh.*) *Hoffm.*
C. verticillata *Hoffm.*
Evernia furfuracea (*L.*) *Mann.*
E. prunastri (*L.*) *Ach.*
Graphis scripta *Ach.*
Lecanora pallida (*Schreb.*) *Schaer.*
L. subfusca (*L.*) *Ach.*
Parmelia borreri rudecta *Tuck.*
P. olivacea (*L.*) *Ach.*
P. oliv. panniformis *Nyl.*
P. perforata (*Jacq.*) *Ach.*
Parmelia perlata (*L.*) *Ach.*
P. physodes (*L.*) *Ach.*
P. saxatilis (*L.*) *Fr.*
P. saxatilis sulcata *Nyl.*
Peltigera horizontalis (*L.*) *Hoffm.*
Pertusaria communis *DC.*
P. velata (*Turn.*) *Nyl.*
Physcia aquila detonsa *Tuck.*
Pyrenula nitida *Ach.*
Pyxine sorediata *Ach.*
Ramalina calic. fastigiata *Fr.*
Stereocaulon coralloides *Fr.*
Sticta amplissima (*Scop.*) *Mass.*
S. pulmonaria (*L.*) *Ach.*
Umbilicaria pust. papulosa *Tuck.*
Usnea barbata ceratina *Schaer.*
U. barbata florida *Fr.*

Miss A. Hibbard, West Roxbury, Mass.

Lactarius hibbardae *Pk.*

Miss M. F. Miller, Washington, D. C.

Metzgeria conjugata *Lindl.*

Miss A. M. Patterson, Stanford University, Cal.

Agaricus pattersonae *Pk.*
Amanitopsis velosa *Pk.*
Hypholoma appendiculatum (*Bull.*)
H. longipes *Pk.*
Lactarius rufulus *Pk.*
Lactarius xanthogalactus *Pk.*
Pleurotus olearius *DC.*
Pluteolus luteus *Pk.*
Psathyrella caespitosa *Pk.*
Tricholoma personatum *Fr.*
Volvaria speciosa *Fr.*

Mrs A. M. Smith, Brooklyn

Alsia abietina *Sull.*
Antitrichia californica *Sull.*
Aulacomnium androgynum *Schwaegr.*
Claopodium crispifolium (*Hook.*)
Dicranoweisia cirrhata *Lindl.*
Dicranum bonjeani *DeNot.*
D. fuscescens *Turn.*
D. scoparium *Hedw.*
Eurhynchium oreganum (*Sull.*)
E. stokesii *B. & S.*
E. stoloniferum (*Hook.*)
Fontinalis antipyretica *L.*
Fontinalis kindbegii *R. & C.*
Hylocomium loreum (*L.*) *Schimp.*
H. proliferum (*L.*) *Lindb.*
H. triquetrum (*L.*) *B. & S.*
Isothecium brewerianum *L. & J.*
Neckera douglasii *Hook.*
N. menziesii *Drumm.*
Philonotis fontana *Brid.*
Plagiothecium undulatum *B. & S.*
Polytrichum juniperinum *Willd.*
Racomitrium canescens *Brid.*
Scleropodium caespitosum *B. & S.*
S colpophyllum (*Sull.*) *Grout.*

Miss T. L. Smith, Worcester, Mass.

Coprinus jonesii *Pk.*

Miss J. B. Spruance, Katahdin Iron Works, Me.

Gomphidius flavipes *Pk.*

Miss M. L. Sutliff, Sacramento, Cal.

Omphalia pyxidata (*Bull.*) *Fr.* | Polyporus volvatus *Pk.*

Mrs E. Watrous, Hague

Cypripedium arietinum *R. Br.* | Helvella gracilis *Pk.*
Dryopteris goldieana (*Hook.*) *Gray* | Phegopteris polypodioides *Fee*
Polystichum braunii (*Spenner*) *Fee*

Miss M. T. Wheeler, Keene Valley

Blitum capitatum *L.*

J. C. Arthur, Lafayette, Ind.

Puccinia agropyri *E. & E.* | Puccinia crandallii *P. & H.*

E. Bartholomew, Stockton, Kan.

Calvatia rubroflava (*Crag.*) *Morg.* | Lactarius vellereus *Fr.*
Collybia subsulphurea *Pk.* | Lycoperdon pulcherrimum *B. & C.*
Tylostoma mammosum *Fr.*

M. S. Baxter & V. Dewing, Rochester

Carex tribuloides reducta *Bailey*
Cyperus filic. macilentus *Fernald*
Eleocharis ovata (*Roth.*) *R. & S.*
Euphorbia polygonifolia *L.*
Meibomia paniculata (*L.*) *Kuntze*
Polygonum lapathifolium *L.*
Senecio obovatus *Muhl.*
Sisymbrium altissimum *L.*

H. C. Beardslee, Ashville, N. C.

Amanita russuloides *Pk.*

H. Blauvelt, Coeymans

Fusicladium pirinum (*Lib.*) *Fckl.*

F. S. Boughton, Pittsford

Lentinus lepideus *Fr.*

C. W. Boyd, Tupper Lake

Clavaria fistulosa *Fr.*

F. J. Braendle, Washington, D. C.

Amanita coccola *Scop.* | Pholiota confragosa *Fr.*
Amanitopsis volvata (*Pk.*) *Sacc.* | Pleurotus lignatilis *Fr.*
Armillaria mucida (*Schrad.*) *Pers.* | P. ostreatus (*Jacq.*) *Fr.*
Polyporus brumalis (*Pers.*) *Fr.*

S. H. Burnham, Sandy Hill

Biatorella simplex (*Dav.*) *B. & R.*
Clitocybe laccata *Scop.*
Clitopilus caespitosus *Pk.*
Cortinarius croceus *Fr.*
Crepidotus croceitinctus *Pk.*
Geoglossum nigritum (*Fr.*) *Cke.*
Hygrophorus lacmus *Fr.*
Lecidea platycarpa *Ach.*
Polyporus admirabilis *Pk.*
P. hispidus (*Bull.*) *Fr.*
Rinodina oreina (*Ach.*) *Mass.*
Salix candida *Fluegge*
Viola vagula *Greene*

G. H. Chadwick, Albany

Calyptospora goeppertiana *Kühn*
Geaster hygrometricus *Pers.*
Morchella esculenta (*Pers.*) *Fr.*

T. T. Clohessy, Utica

Russula aeruginea *Fr.*

G. D. Cornell, Coopers Plains

Crataegus acerba *S.*
C. amoena *S.*
C. dissociabilis *S.*
C. diversa *S.*
C. frutescens *S.*
C. fucata *S.*
C. gracilis *S.*
C. inopinata *S.*
Crataegus numerosa *S.*
C. pellecta *S.*
C. plana *S.*
C. ramosa *S.*
C. repulsans *S.*
C. rubrolutea *S.*
C. suavis *S.*
C. uncta *S.*

J. J. Davis, Racine, Wis.

Aecidium laricis *Kleb.*
Phytopthora thalictri *Wils. & Dav.*

S. Davis, Boston, Mass.

Clavaria amethystinoides *Pk.*
C. ornatipes *Pk.*
Cortinarius nigrellus *Pk.*
Deconica bryophila *Pk.*
Eccilia cinericola *Pk.*
E. subacus *Pk.*
Entoloma deminutivum *Pk.*
E. murinum *Pk.*
Flammula betulina *Pk.*
Galera hypnorum (*Batsch*) *Fr.*
Helvella macropus brevis *Pk.*
Hygrophorus peckii *Atk.*
Hypholoma candolleanum *Fr.*
Inocybe agglutinata *Pk.*
I. decipiens *Bres.*
Inocybe fuscodisca (*Pk.*) *Mass.*
I. hirtellum *Bres.*
I. infelix *Pk.*
I. praetervisa *Quel.*
I. proximella *Karst.*
I. rimosa (*Bull.*) *Fr.*
Leotia punctipes *Pk.*
Naucoria sororia *Pk.*
Omphalia gerardiana *Pk.*
Panaeolus papilionaceus *Fr.*
Pholiota marginella *Pk.*
Psathyrella betulina *Pk.*
Russula pusilla *Pk.*
Tricholoma personatum *Fr.*
Tubaria furfuracea *Pers.*

W. T. Davis, New Brighton

Crataegus uniflora *Muench.*

J. Dearness, London, Ont.

Dermatea crataegicola *Durand*
Diaporthe microstroma *E. & E.*
D. ulmicola *E. & E.*
Didymosphaeria thalictri *E. & D.*
Puccinia caricis-asteris *Arth.*
Pucciniastrum potentillae *Kom.*

F. Dobbin, Shushan

Biatora prasina *Fr.*
Cladonia digit. ceruchoides *Wain.*
Parmelia cetrata *Ach.*
Physcia hypoleuca (*Muhl.*) *Tuck.*
Rinodina constans (*Nyl.*) *Tuck.*
Trentepohlia umbrina (*Kütz.*) *Born.*

E. J. Durand, Ithaca

Microglossum viride (*Pers.*) *Boud.*
Sclerotinia fructigena (*Pers.*)

S. C. Edwards, New Brighton

Armillaria mellea *Vahl*
Fomes annosus *Fr.*
Lenzites sepiaria *Fr.*

C. E. Fairman, Lyndonville

Eutypella angulosa (*Nke.*) *Sacc.*
Lophiotrema semiliberum (*Desm.*)
Ophiochaete herpotricha (*Fr.*) *Sacc.*
Sphaeropsis lyndonvillae *Sacc.*
Sphaeropsis persicae *E. & B.*

G. B. Fessenden, Boston, Mass.

Clitocybe subnigricans *Pk.*

O. E. Fischer, Detroit, Mich.

Clitocybe pulcherrima *Pk.*
C. morbifera *Pk.*
Fistulina pallida *B. & R.*
Pleurotus elongatipes *Pk.*

N. M. Glatfelter, St Louis, Mo.

Boletus pachypus *Fr.*
Boletus subglabripes *Pk.*
Pluteus leoninus coccineus *Cke.*

F. O. Grover, Oberlin, O.

Dothiorella aberrans *Pk.*

C. Guillet, Toronto, Ont.

Claudopus nidulans (*Pers.*) *Pk.*
Clitocybe nobilis *Pk.*
Collybia hirticeps *Pk.*
Geaster limbatus *Fr.*
Omphalia curvipes *Pk.*
O. vestita *Pk.*
Sarcoscypha coccinea (*Jacq.*) *Fr.*

C. C. Hanmer, East Hartford, Conn.

Leptoglossum microsporum (*C. & P.*) *Sacc.*

W. E. Harding, Linden

Centaurea solstitialis *L.*

G. G. Hedgcock, St Louis, Mo.

Ceratostromella moniliformis *Hedgcock*

G. T. Howell, Rockville, Ind.

Daedalea confragosa (*Bolt.*) *Pers.*
Hypholoma rugocephalum *Atk.*
Lentinus cochleatus *Fr.*
Lentinus microspermus *Pk.*
L. vulpinus *Fr.*
Mycena leaiana *Berk.*

C. E. Jones, Selkirk

Conringia orientalis (*L.*) *Dum.*
Lotus corniculatus *L.*

C. H. Kauffman, Ann Arbor, Mich.

Boletus atkinsoni *Pk.*
Collybia campanella *Pk.*
Clitopilus conissans *Pk.*
Cortinarius rubripes *Pk.*
Entoloma pèckianum *Burt*
Hydnum kauffmani *Pk.*
Pleurotus porrigens *Pers.*
Polyporus aurantiacus *Pk.*
P. osseus *Kalchb.*
Polystictus velutinus *Fr.*
Poria fuscocarnea *Pers.*

R. H. Lane, Jolon, Cal.

Mycena acicula (*Schaeff.*) *Fr.*

G. G. Lansing, Romulus

Laestadia bidwellii *Ellis*

W. H. Leibelsperger, Fleetwood, Pa.

Cordyceps herculea (*Schw.*) *Sacc.*

C. G. Lloyd, Cincinnati, O.

Phycomyces nitens (*Ag.*) *Kze.*

J. McPherson, Trenton, N. J.

Phoenix dactylifera L. (undeveloped fruit)

A. P. Morgan, Harrison, O.

Marasmius siccus *Schw.*

G. E. Morris, Waltham, Mass.

Amanita porphyria *Fr.*
Badhamia lilacina (*Fr.*) *Rost.*
Balansia hypoxylon (*Pk.*) *Atk.*
Clavaria platyclada *Pk.*
Clitocybe adirondackensis *Pk.*
Cortinarius multiformis *Fr.*
C. rigidus (*Scop.*) *Fr.*
Entoloma variabile *Pk.*
Fuligo ovata (*Schaeff.*) *Macbr.*
Geoglossum americanum *Cke.*
Guepinia aurea *Mont.*
Helvella gracilis *Pk.*
Hygrophorus borealis *Pk.*
Hygrophorus caprinus (*Scop.*) *Fr.*
H. lacmus *Fr.*
Leotia chlorocephala *Schw.*
Leptonia abnormis *Pk.*
Marasmius siccus *Schw.*
Mycena epipterygia *Scop.*
M. galopoda *Fr.*
Nolanea conica *Pk.*
Panus strigosus *B. & C.*
Pholiota duroides *Pk.*
Polyporus volvatus *Pk.*
Tricholoma grammopodium (*Bull.*) *Fr.*
Tylostoma americanum *Lloyd* From E.B. Sterling. Denied Col 1901-02-03.

G. E. Morris & S. Davis, Mass.

Entoloma modestum *Pk.*
Mycena alcalina *Fr.*
Naucoria tabacina bicolor *Pk.*

W. A. Murrill, New York

By exchange

Diaporthe parasitica *Murrill*

J. J. Neuman, Horicon, Wis.

Hydnum sulcatipes *Pk.*
Irpex nodulosus *Pk.*
Myriadoporus induratus *Pk.*
Poria medulla-panis (*Pers.*) *Fr.*
P. obducens *Pers.*
Steccherinum adustulum *Banker*

R. S. Phifer, Danville, Va.

Lycoperdon pulcherrimum *B. & C.*

R. R. Riddell, Albany

Lepiota naucinoides *Pk.*

F. J. Seaver, New York

Cordyceps militaris (*L.*) *Link*
Gloniopsis smilacis (*Schum.*)
Hypocrea gelatinosa (*Tode*) *Fr.*
H. patella *C. & P.*
Hypoderma commune (*Fr.*) *Duby*
Hypomyces aurantius (*Pers.*) *Fckl.*
Hypoxylon sassafras *Schw.*
Nectria aureofulva *C. & E.*
N. cinnabarina (*Tode*) *Fr.*
Rosellinia aquila (*Fr.*) *DeNot.*

E. B. Sterling, Trenton, N. J.

Hygrophorus psittacinus (*Schaeff.*)
Lycoperdon gemmatum *Batsch*
Russula pusilla *Pk.*
Tricholoma fumidellum *Pk.*
Volvaria speciosa *Fr.*
Denied Col. 1907

F. C. Stewart, Geneva

Cronartium ribicola *Dietr.*

D. R. Sumstine, Wilkinsburg, Pa.

Collybia hirticeps *Pk.*
Flammula eccentrica *Pk.*
Monilia aureofulva *C. & E.*
Rhinotrichum sumstinei *Pk.*
Thelephora caryophyllea (*Schaeff.*)
Zygodesmus pannosus *B. & C.*
Zygodesmus rubiginosus *Pk.*

H. von Schrenk, St Louis, Mo.

Lepiota xylophila *Pk.*

J. M. Van Hook, Wooster, O.

Flammula betulina *Pk.*
Russula compacta *Frost*

H. L. Wells, New Haven, Conn.

Lepiota americana *Pk.*
Tricholoma alboflavidum *Pk.*
Tricholoma columbetta *Fr.*

F. B. Wheeler, Syracuse

Cortinarius lilacinus *Pk.*
Lactarius turpis *Fr.*
Sporodina aspergillus (*Scop.*) *Schroet.*

T. E. Wilcox, Washington, D. C.

Boletus bicolor *Pk.*
B. caespitosus *Pk.*
B. chrysenteron *Fr.*
B. retipes *B. & C.*
B. subsanguineus *Pk.*
Hydnum fennicum *Karst.*
Phylloporus rhodoxanthus (*Schw.*)
Polystictus sanguineus (*L.*) *Mey.*
Russula chamaeleontina *Fr.*
R. crustosa *Pk.*
R. rugulosa *Pk.*
Tricholoma personatum *Fr.*

B. C. Williams, Newark

Stropharia bilamellata *Pk.*

H. C. Wilson, Peabody, Mass.

Russula pectinatoides *Pk.*

D. B. Young, Albany

Marasmius minutus *Pk.*

SPECIES NOT BEFORE REPORTED

Ajuga reptans L.

In waste grassy places. Remsen, Oneida co. June. Introduced from Europe and sparingly naturalized.

Biatora prasina Fr.

Bark of sugar maple, Acer saccharum L. Shushan, Washington co. March. Frank Dobbin.

Biatorella simplex (Dav.) B. & R.

Rocks. Helderberg mountains. July. S. H. Burnham. This is Lecanora privigna (Ach.) Nyl.

Boletus niveus Fr.

Sandy soil. Karner, Albany co. August. This has by some been considered a white variety of Boletus scaber Fr. It appears to us to be worthy of specific distinction, for it differs from that species not only in the color of the pileus but also in its smaller tubes and in the character of the stem, which is adorned with mere scurfy or appressed squamules instead of the conspicuous dotlike fibrous scales of the stem of B. scaber.

Centaurea solstitialis L.

Linden, Genesee co. August. W. E. Harding. This plant was introduced from Europe into California many years ago. Whether the plant has come here from the west or is the result of a more recent introduction from Europe is uncertain.

Cetraria glauca (L.) Ach.

On dead hemlock, Tsuga canadensis Carr. Panther mountain, Essex co. June. Mrs C. W. Harris.

Chaetomium sphaerospermum C. & E.

Bottom of a barrel standing in a damp cellar. Menands, Albany co. September. The spores in our specimens vary from globose to broadly elliptic and from .0003–.0004 of an inch in diameter.

Cladonia bacillaris (Del.) Nyl.

Decaying wood. Adirondacks. July. Mrs C. W. Harris.

Cladonia delicata (Ehrh.) Fl.

Decaying wood. Near Chilson lake, Essex co. August. Mrs C. W. Harris. Sand Lake, Rensselaer co. C. H. Peck. This was formerly reported as a variety of Cladonia squamosa, but it is now deemed worthy of specific distinction.

Clavaria ornatipes n. sp.

Clubs 1–2 inches tall, gregarious, sparingly branched; stem slender hairy, fuscous or brown, the branches irregular, terete, whitish, grayish or cinereous, the tips acute or obtuse; spores broadly elliptic or subglubose, .0003–.00045 of an inch long, .00024–.0003 broad.[1]

In low swampy woods, usually among mosses. Sand Lake.

In New York State Museum Report 24, page 82 this was referred to Clavaria trichopus Pers. After seeing specimens of it from other localities and finding it constantly differing from the descriptions of that species, which is called "snowy white" and is much branched, it has seemed to us to be distinct.

Clitocybe subcyathiformis Pk.

In damp places under shrubs. Karner. October. For the description of this species see article on "Edible Fungi."

Clitopilus subplanus n. sp.

Pileus thin, broadly convex or nearly plane, slightly depressed in the center or distinctly umbilicate, glabrous, whitish or grayish white, flesh white; lamellae thin, close, adnate or slightly decurrent, dingy flesh colored; stem slender, glabrous, terete or compressed, stuffed or hollow, colored like the pileus; spores flesh colored, angular, uninucleate, .0004–.0005 of an inch long, 00024–.0003 broad.

Pileus 1–1.5 inches broad; stem 1–1.5 inches long, 1–2 lines thick.

Among fallen leaves and decaying vegetable matter in woods. Sand Lake, Rensselaer co. and Gansevoort, Saratoga co. July and August.

This is closely related to Clitopilus carneoalbus With. from which I have separated it because of the more umbilicate

[1] Latin descriptions of this and other new species may be found in the last chapter of this report.

pileus, the absence of any reddish tints in the pileus, its stuffed or hollow stem and specially of its larger spores which are longer than broad.

Crataegus anomala Sarg.

Crown Point, Essex co. and Fort Ann, Washington co. Flowers in May, fruit ripens in September. The plants now referred to this species were formerly credited to C. exclusa Sarg. from which they may be separated by the fruit which is distinctly narrowed toward the base. The species was founded on specimens collected in Canada.

Crataegus suborbiculata Sarg.

Letchworth park, Wyoming co. Flowers in May, fruit ripens the last week in September. This species also was founded on specimens collected in Canada. It is placed in the group Punctatae.

The following species of Crataegus are here reported by name only as additions to our flora. The names are arranged under their respective groups. Nearly all are new species of which descriptions, localities and remarks are contained in the three chapters on Crataegus, immediately following the present one.

CRUS-GALLI

Crataegus arduennae *S.*
C. cerasina *S.*
C. geneseensis *S.*
C. robusta *S.*

PUNCTATAE

Crataegus barbara *S.*
C. celsa *S.*
C. desueta *S.*
C. dewingii *S.*
C. notabilis *S.*

PRUINOSAE

Crataegus acerba *S.*
C. amoena *S.*
C. aridula *S.*
C. barryana *S.*
C. bronxensis *S.*
C. clintoniana *S.*
C. congestiflora *S.*
C. cruda *S.*
Crataegus dissociabilis *S.*
C. foliata *S.*
C. gracilis *S.*
C. implicata *S.*
C. inusitula *S.*
C. livingstoniana *S.*
C. macera *S.*
C. macrocalyx *S.*
C. numerosa *S.*
C. oblita *S.*
C. ovatifolia *S.*
C. pellecta *S.*
C. placiva *S.*
C. plana *S.*
C. promissa *S.*
C. pulchra *S.*
C. radiata *S.*
C. ramosa *S.*
C. rubrolutea *S.*
C. strigosa *S.*
C. tortuosa *S.*
C. uncta *S.*
C. xanthophylla *S.*

TENUIFOLIAE

Crataegus bella *S.*
C. boothiana *S.*
C. claytoniana *S.*
C. conferta *S.*
C. fucata *S.*
C. gracilipes *S.*
C. ignea *S.*
C. insignata *S.*
C. leptopoda *S.*
C. luminosa *S.*
C. nescia *S.*
C. recta *S.*
C. slavini *S.*
C. spatifolia *S.*
C. suavis *S.*

MOLLES

Crataegus radians *S.*

FLABELLATAE

Crataegus dayana *S.*
C. gloriosa *S.*
C. letchworthiana *S.*
C. limosa *S.*
C. steubenensis *S.*

COCCINEAE

Crataegus chateaugayensis *S.*
C. harryi *S.*
Crataegus neobaxteri *S.*
C. puberis *S.*
C. spissa *S.*
C. verrucalis *Pk.*

INTRICATAE

Crataegus cornellii *S.*

ANOMALAE

Crataegus affinis *S.*
C. brachyloba *S.*
C. floridula *S.*
C. inopinata *S.*
C. repulsans *S.*
C. simulans *S.*
C. singularis *S.*

TOMENTOSAE

Crataegus admiranda *S.*
C. calvini *S.*
C. comans *S.*
C. efferata *S.*
C. finitima *S.*
C. frutescens *S.*
C. honeoensis *S.*
C. spinifera *S.*
C. structilis *Ashe*
C. venustula *S.*

Cronartium ribicola Dietr.

On living leaves of black currant, Ribes nigrum L. Agricultural Experiment station grounds. Geneva. September 26, 1906. F. C. Stewart. This is an injurious parasitic fungus which has probably been recently introduced into this country. Its aecidial form, Peridermium strobi, occurs on the trunk and branches of white pine to which it is more injurious than the Cronartium is to currant bushes. Fortunately this form has not yet been detected in this country and it is possible that we may yet be free from it.

Diaporthe parasitica Murr.

Parasitic on the branches of chestnut trees to which it is injurious and eventually destructive. Various places in the vicinity of New

York. Our specimens are from Bronx park. There are two forms of the plant, a summer or conidial form which was collected in July, and a winter or perfect form bearing ascospores, which was collected in December. Received from W. A. Murrill in exchange. Specimens have also been communicated by G. G. Atwood which were collected in Westchester co.

Flammula pulchrifolia n. sp.

Pileus fleshy but thin, hemispheric becoming convex, slightly viscid when moist, hygrophanous, fibrillose or, in large specimens, squamulose in the center and fibrillose on the margin, pale pink or pallid on the margin and pink in the center, flesh white, taste bitter and unpleasant; lamellae thin, close, adnate, sometimes slightly sinuate, whitish, soon bright tawny or Indian yellow becoming bright tawny ochraceous with age; stem equal or nearly so, stuffed or hollow, pallid, sometimes yellowish at the base, fibrillose at the top from the remains of the veil; spores bright tawny ochraceous in a thick layer, ochraceous buff in a thin one, .0003 of an inch long, .0002–.00024 broad.

Pileus 1–2 inches broad; stem 1–1.5 inches long, 1.5–2 lines thick.

Decaying wood of hemlock, Tsuga canadensis Carr. Menands, Albany co. July and August.

This beautiful species is easily recognized by the pink tint of the pileus, the bitter flavor of its flesh and the peculiar bright colors of its lamellae and spores. The fibrils at the top of the stem when stained by the falling spores might be mistaken for a slight annulus.

Galium erectum Huds.

Abundant along a stream in an upland field 3 miles southeast of Utica. June. J. V. Haberer. The upright bedstraw is a recently introduced plant and is related to wild madder, Galium mollugo L.

Hygrophorus coloratus n. sp.

Pileus fleshy, convex or nearly plane, often umbonate, even, very viscid or glutinous, yellowish red-orange or bright red, flesh white, yellow under the cuticle; lamellae unequal, distant, arcuate, adnate or decurrent, white, sometimes tinged with yellow, interspaces venose; stem equal or tapering upward, glutinous, stuffed or hollow, white or slightly tinged with yellow, sometimes when young showing a slight floccose veil near the top; spores .0003–.0004 of an inch long, .0002–.00024 broad.

Pileus 1–2.5 inches broad; stem 2–3 inches long, 2–4 lines thick. Under tamarack and balsam fir trees. Fulton Chain, Herkimer co. October.

This is a beautiful species of Hygrophorus closely related to H. speciosus Pk. and H. aureus Arrh. From the last I have separated it because of its different habitat, its frequently umbonate pileus, its white or whitish stem and its partial floccose white veil. By this last character and its persistently red or orange colored pileus it is separable from H. speciosus Pk. and H. bresadolae Quel. It is possible that further observation may prove that all these are forms of one variable species.

Hygrophorus lacmus Fr.

Ground in woods of deciduous trees. Wilburs Basin, Saratoga co. November. S. H. Burnham. A single specimen.

Hypocrea polyporoidea B. & C.

Bark and decorticated wood of beech, Fagus americana Sweet. Adirondack mountains. Lake Pleasant, Hamilton co. and Star lake, St Lawrence co. August.

Lactarius minusculus Burl.

Among fallen leaves and mosses under white birches. Menands, Albany co. July. This species has hitherto been confused with L. subdulcis Fr. and has been separated because of its smaller size and acrid or tardily acrid taste.

Leaia piperata Banker

Decaying wood. East Schaghticoke, Rensselaer co. H. J. Banker. Meadowdale, Albany co. September. Remarkable for its dissected pileus and its hot peppery flavor.

Lecidea platycarpa Ach.

Rocks. Vaughns, Washington co. August. S. H. Burnham.

Lophiotrema semiliberum (Desm.) Sacc.

Dead grass stems. Lyndonville, Orleans co. May. C. E. Fairman.

Lotus corniculatus L.

Selkirk, Albany co. C. E. Jones. An introduced plant sparingly naturalized.

Metzgeria conjugata Lindb.

Perpendicular surface of rocks. Shandaken, Ulster co. June. Miss M. F. Miller.

Monilia crataegi Diedicke

Parasitic on living leaves of various species of thorn bushes. It causes the leaves to turn brown and die and is therefore more or less injurious to the plant it attacks, according to the severity of the attack. The fungus is at first whitish, but soon becomes cinereous. When fresh it emits a strong odor. In the typical form of the fungus the spores are said to be 13 μ long, 11 μ broad. In our specimens they vary from 12–20 μ long, and 11–12 μ broad. Painted Post, Steuben co. Also Clayton, Jefferson co. and near Albany. May and June.

Myxosporium necans n. sp.

Acervuli in longitudinal series, erumpent, whitish within, spores oozing out in whitish or yellowish white tendrils or masses; spores oblong or elliptic, .00024–.0004 of an inch long, .00008–.000012 broad, often binucleate, supported on slender sporophores.

Bark of living chokecherry, Prunus virginiana L. North Greenbush, Rensselaer co. June. The fungus attacks the trunk near the base and soon kills the shrub.

Nolanea suaveolens n. sp.

Pileus submembranous, convex, umbilicate, obscurely fibrillose or unpolished, indistinctly striate on the margin, smoky brown; lamellae thin, unequal, close, adnate, whitish becoming dingy pink; stem slender, glabrous, hollow, brown; spores angular, uninucleate, .0004–.0005 of an inch long, .00024–.0003 broad.

Pileus 6–10 lines broad; stem 1.5–2 inches long, .5 of a line thick. Woods. Sand Lake, Rensselaer co. August.

The dried specimens emit an agreeable odor similar to that of Lactarius camphoratus or L. glycio'smus. This character is suggestive of the specific name.

Parmelia perforata (Jacq.) Ach.

Trees. Near Chilson lake, Essex co. June. Mrs C. W. Harris.

Parmelia cetrata Ach.

Trunks of trees in swamps. Shushan, Washington co. May. Frank Dobbin.

Physcia hypoleuca (Muhl.) Tuckm.

Trunks of trees. Shushan. April. Frank Dobbin.

Pholiota duroides Pk.

Ground in woods near Syracuse. August. G. E. Morris and C. H. Peck. For description of this species see article on "New York Species of Pholiota."

Polyporus alboluteus E. & E.

Decaying prostrate trunk of spruce, between Long lake and Mud pond, Hamilton co. Imperfect specimens of this rare species were formerly referred to Lenzites sepiaria dentifera, in New York State Museum Report 40, page 75. It has been found but once in our State. The type specimens were collected in Colorado, the only other locality at present known for the species. A new genus, Aurantiporellus, has recently been founded by Dr Murrill on this species.

Polyporus spraguei B. & C.

On old stumps of oak and chestnut. Sand Lake, Rensselaer co. and Wading River, Suffolk co. July and August.

Polystictus montagnei Fr.

Ground. Sand Lake, Rensselaer co. and Piseco, Hamilton co. This is a rare species with us. A single specimen was found in each locality. It is distinguished from allied species by the large size of its pores. The pileus is often very irregular.

Rinodina oreina (Ach.) Mass.

Peaked rock near Shushan, Washington co. July. S. H. Burnham.

Russula aeruginea Fr.

Near Utica. August. T. T. Clohessy. Near Gansevoort, Saratoga co. C. H. Peck.

Sphaeropsis lyndonvillae Sacc.

Dead branches of a cultivated species of Althaea. Lyndonville, Orleans co. C. E. Fairman.

Sphaeropsis persicae E. & B.

Dead branches of flowering almond, Prunus japonica Thunb. Lyndonville. May. C. E. Fairman.

Stereocaulon coralloides Fr.

Rocks. Mt Marcy. July. C. H. Peck. Near Chilson lake, Essex co. June. Mrs C. W. Harris.

Stropharia bilamellata Pk.

In a plowed field near Newark, Wayne co. September. B. C. Williams. See article on "Edible Fungi."

Trentepohlia umbrina (Kütz.) Born.

Bark of canoe birch, Betula papyrifera Marsh. Shushan, Washington co. May. Frank Dobbin.

Tubercularia davisiana Sacc. & Trav.

Parasitic on Rhytisma salicinum (Pers.) Fr. Catskill mountains.

Viola vagula Greene

Low damp ground near Vaughns, Washington co. May. S. H. Burnham.

SOME ADDITIONS TO THE CRATAEGUS FLORA OF WESTERN NEW YORK

BY C. S. SARGENT

The following paper is based chiefly on collections and observations made by Mr John Dunbar of Rochester in Buffalo and Niagara Falls between 1901 and 1906. In it are also included a few species distinguished at Rochester since the publication in the fourth volume of the Proceedings of the Rochester Academy of Science in 1903 of my paper on *Crataegus in Rochester*, and a few others discovered in the valley of the Genesee river south of Rochester by Messrs Baxter and Dewing of Rochester, and in Canandaigua and Chapinville, Ontario co. by the Rochester botanists.

1 NUTLETS WITHOUT VENTRAL CAVITIES

1 CRUS-GALLI

Leaves obovate, cuneate, coriaceous, dark green and shining above, mostly glabrous, usually serrate only above the middle, their veins thin except on vigorous shoots and often within the parenchyma; calyx glabrous; fruit oblong to subglobose; nutlets 1–3, obtuse and rounded at the ends, prominently ridged on the back.

Veins within the parenchyma
  Stamens 10 or less
    Anthers rose color..1 C. crus-galli var. pyracanthifolia
    Anthers white .....2 C. arduennae
Veins prominent
  Anthers pale pink
    Stamens 9–10 .....3 C. geneseensis
    Stamens 10–20
      Flowers at least 1.8 cm in diameter, in broad many-flowered corymbs; leaves broadly ovate; fruit crimson; spines stout..4 C. robusta
      Flowers not more than 1.2 cm in diameter, in few-flowered corymbs; leaves narrowly obovate; fruit bright cherry-red; spines slender .....5 C. cerasina

Crataegus crus-galli var. **pyracanthifolia** Aiton

Hort. Kew. II. 170 (1788). Sargent, Silva N. Am. XIII. 39, t. 637; Bot. Gazette XXXV. 100; Man. 369.

Niagara Falls, J. Dunbar and C. S. Sargent (№ 17), September 16, 1904, J. Dunbar, September 27, 1905 and June 1906; Rochester, Baxter and Dewing (№ 314), June 10 and October 15, 1905; also at Niagara on the Lake, Ontario and in Delaware.

Crataegus arduennae Sargent

Bot. Gazette XXXV. 377 (1903); Man. 373, f. 291; Acad. Sci. Phila. Proc. 582 (1905).

South Buffalo, B. H. Slavin (№ 14), June 6 and October 1906; also southern Ontario, through southern Michigan to northeastern Illinois, and in eastern Pennsylvania.

Crataegus arduennea was first described as entirely glabrous but there are often a few hairs on the upper side of the midribs of the young leaves; and a few minute hairs can be found occasionally on the young pedicels of the Buffalo plant.

Crataegus geneseensis n. sp.

Glabrous with the exception of a few hairs on the young leaves. Leaves obovate-oblong, short pointed at the rounded or acute apex, gradually narrowed from near the middle to the concave-cuneate entire base, and finely serrate above, with usually incurved teeth; nearly fully grown when the flowers open about the 1st of June and then thin, slightly hairy along the upper side of the midribs, dark yellow-green and lustrous above and pale below, and at maturity subcoriaceous, dark green and very lustrous on the upper surface, pale yellow-green on the lower surface, 4.5–5 cm long and 2–2.5 cm wide, with thin prominent midribs, and conspicuous primary veins extending obliquely to above the middle of the leaf; petioles slender, narrowly wing-margined sometimes nearly to the base, slightly hairy on the upper side while young, soon glabrous, 5–8 mm long; leaves on vigorous shoots oval and acuminate to obovate and rounded at the apex, concave-cuneate at the base, coarsely serrate, often deeply lobed, 6–7 cm long and 3.5–4 cm wide, with thick midribs, and stout broadly winged rose colored petioles. Flowers 1–1.2 cm in diameter, on slender pedicels, in wide lax many-flowered corymbs, the lower peduncles from the axils of upper leaves; calyx-tube narrowly obconic, the lobes slender, elongated, acuminate, minutely glandular serrate near the base, reflexed after anthesis; stamens 9–11, filaments persistent on the fruit; anthers pink; styles 1, 2 or rarely 3. Fruit ripening in the middle of October, on slender drooping reddish pedicels, in few-fruited clusters, short-oblong, full and rounded at the ends, scarlet, lustrous, marked by large dark dots, 1.2–1.5 cm long and 1–1.2 cm wide; calyx little enlarged, with a deep narrow cavity, and spreading lobes, their tips often deciduous from the ripe fruit; flesh thin, yellow, dry and mealy; nutlets 1–3, obtuse at the ends, rounded and slightly grooved on the back, about 8 mm long, and 6 mm in diameter.

A tree 3–4 m high, with a trunk sometimes 3 dm in diameter, widespreading branches forming a broad flat topped open head, and slender slightly zigzag branchlets light orange-green and marked by many pale lenticels when they first appear, pale orange colored in their first season and dull gray-brown the following year, and armed with slender nearly straight, light brown ultimately gray spines 4–4.5 cm long and persistent and become branched on old stems.

Banks of the Genesee river above Rochester, J. Dunbar (№ 1 type), June 1 and October 23, 1903; Tuscarora, Baxter and Dewing (№ 295, a much older tree with smaller leaves), September 14, 1904, and May 30, 1905.

Crataegus robusta n. sp.

Leaves glabrous, oblong-obovate, gradually narrowed or rounded and usually short pointed at the apex, narrowed from above the middle to the cuneate entire base, and finely doubly serrate above, with straight grandular teeth; nearly fully grown when the flowers open about the 10th of June and then thin and lustrous above, and at maturity subcoriaceous, dark green and very lustrous on the upper surface, pale yellow-green on the lower surface, 5–6 cm long and 3.5–4 cm wide; leaves on vigorous shoots often 8–9 cm long and 5–6 cm wide, with prominent pale yellow midribs and 6 or 7 pairs of prominent primary veins; petioles stout, wing-margined often to below the middle, glandular early in the season toward the apex, often tinged with red in the autumn, 7–12 mm in length. Flowers 1.8 cm in diameter, on elongated slender glabrous pedicels, in broad lax many-flowered corymbs; calyx-tube narrowly obconic, glabrous, the lobes slender, acuminate, glandular serrate; stamens 10–20; anthers pale pink; styles usually 2 or 3, surrounded at the base by a narrow ring of pale tomentum. Fruit ripening the end of September, on long slender drooping pedicels, in few-fruited clusters, short-oblong to obovate, crimson, lustrous, marked by occasional large pale dots, about 2 cm long and 7–8 mm wide; calyx prominent, with a broad shallow cavity, and spreading and reflexed or appressed narrow lobes, dark red on the upper side below the middle and often deciduous from the ripe fruit; flesh thin, yellow-green, dry and mealy; nutlets 2 or 3, gradually narrowed at the ends, rounded at the base, ridged on the back, with a low grooved ridge, about 1 cm. long, and 5 mm wide.

A tree 5–6 m high, with a trunk covered with dark scaly bark

and sometimes 3 dm in diameter, thick widespreading branches forming a symmetrical round-topped head often 6–7 m in diameter, and stout nearly straight pale orange-brown lustrous branchlets marked while young with oblong pale lenticels, light gray and shining in their second season, and armed with straight red-brown shining spines 5–7 cm in length, persistent and becoming branched on the old trunk and branches.

Banks of the Niagara river above the falls, J. Dunbar and C. S. Sargent (№ 16 type), September 16, 1904, J Dunbar, June 12, 1905; Buffalo, J. Dunbar (№ 26), September 30, 1904, May 28, June 12 and September 26, 1905.

Crataegus cerasina n. sp.

Leaves oblong-obovate, acute or rounded at the apex, gradually narrowed and concave-cuneate at the entire base and sharply doubly serrate above, with straight glandular teeth; nearly half grown when the flowers open about the 10th of June and then glabrous with the exception of a few caducous pale hairs on the upper side of the midribs, thin, dark green and lustrous above and pale below, and at maturity subcoriaceous, dark yellow-green and shining on the upper surface, light yellow-green on the lower surface, 5–6.5 cm long and 2.6–3.5 cm wide, with slender yellow midribs, and 5 or 6 pairs of thin, prominent primary veins; petioles slender, wing-margined to below the middle, 1.2–1.5 cm in length; leaves on vigorous shoots coriaceous, often slightly lobed toward the apex, more coarsely serrate and sometimes 7 cm long and 5 cm wide, with stout midribs, more prominent veins, and thick broadly winged reddish petioles about 1 cm in length. Flowers 1.2 cm in diameter, on long slender glabrous pedicels, in few usually 7–10-flowered compact corymbs; calyx-tube narrowly obconic, glabrous, the lobes slender, elongated, acuminate, glandular serrate, slightly hairy on the inner surface toward the base, reflexed after anthesis; stamens 10–20; anthers pale pink; styles usually 2. Fruit ripening from the middle to the end of September, on slender reddish pedicels, in 1–5-fruited drooping clusters, short-oblong, full and rounded at the ends, bright cherry-red, very lustrous, marked by occasional large pale dots, 1–1.2 cm long and 8–10 mm wide; calyx little enlarged, with a deep narrow cavity, and slender spreading, persistent lobes dark red on the inner surface toward the base and slightly serrate near the middle; flesh thin, yellow, dry and mealy; nutlets 2, full and rounded at the ends, ridged on the back, with a hight broad ridge, 7–8 mm long, and 4–5 mm wide.

A tree 5–7 m high, with a tall trunk 2–3 dm in diameter, covered with ashy gray scaly bark, spreading and ascending branches forming a wide open round-topped head, and slender nearly straight branchlets light olive-green and glabrous when they first appear, becoming light orange color and lustrous during their first season and dark gray-brown the following year, and armed with many slender nearly straight bright chestnut-brown shining ultimately dark gray-brown spines 3–5 cm in length.

Niagara Falls, J. Dunbar and C. S. Sargent (№22, type), September 16, 1904, J. Dunbar, June 12, 1905; also (№ 22A and 22B), J. Dunbar and C. S. Sargent, September 16, 1904, and J. Dunbar, June 12, 1906.

II PUNCTATAE

Leaves usually thin, mostly acute or occasionally rounded at the apex, their veins prominent; stamens 20; fruit short-oblong or rarely subglobose or obovate, often conspicuously punctate; flesh usually dry and mealy.

Anthers rose color or yellow; leaves obovate, often acutely lobed above the middle, especially on vigorous shoots, more or less villose below; fruit flattened at the ends, marked by large dots, dark red or bright yellow .....1 C. punctata

Anthers dark rose color; leaves rhombic, glabrous at maturity

Leaves subcoriaceous; flowers on stout villose pedicels; calyx thickly coated with matted white hairs; fruit subglobose, crimson, very lustrous .....2 C. celsa

Leaves thin; flowers on slender glabrous pedicels; calyx glabrous; fruit short-oblong or sometimes slightly obovate, orange-red slightly lustrous .....3 C. notabilis

Anthers pink; corymbs and leaves glabrous

Leaves oblong-obovate, acuminate at the base; fruit obovate.....4 C. barbara

Leaves ovate to oval or orbicular, abruptly narrowed at the base; fruit short-oblong .....5 C. dewingii

Crataegus punctata Jacquin

Hort. Vind. 1. 10, t. 28 (1770). Sargent, Silva N. Am. IV. 103, t. 184; Man. 389, f. 308; Acad. Sci. Phila. Proc. 583 (1905).

Buffalo, J. Dunbar (№ 5), May 21 and September 25, 1903; also from Canada to Illinois and to the mountains of western North Carolina.

Crataegus celsa n. sp.

Leaves rhombic to oblong-obovate, acute or acuminate at the apex, gradually narrowed and concave-cuneate at the entire base, finely doubly serrate above, with incurved glandular teeth, and slightly divided above the middle into 4 or 5 pairs of small acute lobes; about half grown when the flowers open during the last week of May and then membranaceous, light yellow-green and sparingly villose especially on the midribs and veins, and at maturity subcoriaceous, glabrous, dark green and lustrous on the upper surface, pale on the lower surface, 5–7 cm long and 3.5–5 cm wide, with slender prominent midribs and 5–7 pairs of primary veins extending obliquely toward the apex of the leaf and deeply impressed on its upper side; petioles slender, narrowly wing-margined often nearly to the middle, slightly villose while young, soon becoming glabrous, often rose color in the autumn, 1.5–2 cm in length; stipules linear, minutely glandular, fading brown, caducous; leaves on vigorous shoots thicker, more coarsely serrate and sometimes 9–10 cm long and 8–9 cm wide, with thick rose colored midribs and stout broadly winged petioles. Flowers 1.5 cm in diameter, on stout villose pedicels, in compact many-flowered hairy corymbs, with linear to linear-obovate slightly glandular caducous bracts and bractlets; calyx-tube narrowly obconic, thickly coated with long matted white hairs, the lobes wide, acuminate, glandular serrate, glabrous on the outer, villose on the inner surface below the middle; stamens 20; anthers small, dark rose color; styles usually 3. Fruit ripening early in October, on stout reddish drooping pedicels, in wide many-fruited clusters, subglobose, full and rounded at the ends, crimson, very lustrous, marked by large pale dots, about 1 cm long and 8 or 9 mm wide; calyx prominent, with a deep narrow cavity, and large spreading, closely appressed, light green persistent lobes; flesh thin, yellow, dry and mealy; nutlets 3, full and rounded at the ends, or narrow and acuminate at the apex, rounded and slightly ridged on the back, with a broad low ridge 7–8 mm long, and 5 mm wide.

An arborescent shrub sometimes 7 m high, with numerous stems covered with dark gray scaly bark, spreading and ascending branches, and stout slightly zigzag branchlets dark olive-green and sparingly hairy when they first appear, becoming light orange-brown, very lustrous and marked by large oblong lenticels in their first season and pale gray-brown the following year, and armed with numerous stout nearly straight purple shining spines 5–6 cm long, often pointing toward the base of the branch, and generally persistent on old stems.

Niagara Falls, J. Dunbar (№ 32, type), September 28, 1905, and May 28, 1906.

Similar to Crataegus pausiaca Ashe, in habit, in the color of the branchlets and in the shape and venation of the leaves, this species differs from it in its larger flowers on much shorter pedicels, in the more villose calyx-tube and much broader, more foliaceous calyx-lobes, and in the smaller subglobose crimson fruit on shorter stalks.

Crataegus notabilis n. sp.

Leaves rhombic, acuminate, gradually narrowed and acute at the entire base, coarsely doubly serrate above, with incurved or straight glandular teeth, and divided above the middle into 2 or 3 pairs of small acuminate spreading lobes; when they unfold slightly tinged with red and glabrous with the exception of a few scattered pale hairs along the upper side of the midribs, membranaceous and about half grown when the flowers open at the end of May, and at maturity thick and firm, glabrous, smooth and dark yellow-green on the upper surface, pale blue-green on the lower surface, 6–7 cm long and 4–4.5 cm wide, with prominent yellow midribs, and thin primary veins extending very obliquely to the points of the lobes; petioles slender, broadly wing-margined often to below the middle, occasionally furnished early in the season with minute deciduous glands, glabrous, 2–3 cm in length; stipules linear, glandular, fading brown, caducous. Flowers 1.2 cm in diameter, on long slender glabrous pedicels, in usually 6–8-flowered lax thin-branched corymbs, with linear bracts and bractlets, the lower peduncles from the axils of the upper leaves; calyx-tube broadly obconic, glabrous, the lobes slender, acuminate, entire or slightly dentate above the middle, glabrous on the outer, slightly villose on the inner surface, reflexed after anthesis; stamens 20; filaments persistent on the ripe fruit; anthers large, red-purple; styles 3–5. Fruit ripening early in October, on long drooping pedicels, in few-fruited clusters, short-oblong or slightly obovate, full and rounded at the ends, orange-red, marked by occasional large dark dots, 8–10 mm long, 7–8 mm in diameter; calyx prominent, with a short tube, a deep narrow cavity, and slender spreading persistent lobes; flesh thin, yellow, hard and dry; nutlets 3–5, rounded at the ends, ridged on the back, with a broad, low grooved ridge, light colored, 5–6 mm long, and about 4 mm wide.

An arborescent shrub 5–7 m high, with stout ascending and spreading stems covered with dark gray scaly bark, small spreading

branches forming a narrow open head, and slender slightly zigzag glabrous branchlets dull orange-green and marked by many small pale lenticels when they first appear, becoming light orange-brown or chestnut-brown and lustrous in their first season and dull gray-brown, the following year, and armed with numerous very slender nearly straight dark chestnut-brown or purplish shining ultimately ashy gray spines 3.5–5 cm in length, persistent and becoming branched on old stems.

Buffalo, J. Dunbar (№ 14, type), June 1 and September 24 and 30, 1904.

Crataegus barbara n. sp.

Glabrous with the exception of the hairs on the inner surface of the calyx-lobes. Leaves oblong-obovate, acuminate, gradually narrowed to the long slender acuminate entire base, finely serrate above, with minute incurved teeth, and only slightly lobed near the apex; nearly fully grown when the flowers open during the first week of June and then thin, dark green, smooth and lustrous above and pale below, and at maturity subcoriaceous, dark green and very lustrous on the upper surface, pale on the lower surface, 5.5–7 cm long and 2.5–3 cm wide, with stout yellow midribs, and thin very prominent primary veins extending obliquely toward the apex of the leaf; petioles slender, narrowly wing-margined nearly to the middle, 1.5–2.5 cm in length; leaves on vigorous shoots oblong to obovate, narrowed to the ends, more coarsely serrate, often deeply divided into 1 or 2 narrow acuminate lateral lobes, frequently 9-10 cm long and 4.5–6 cm wide, with stout broadly winged petioles. Flowers 1.3–1.5 cm in diameter, on long slender pedicels, in wide lax many-flowered corymbs, the lower peduncles from the axils of upper leaves; calyx-tube narrowly obconic, glabrous, the lobes slender, acuminate, finely glandular serrate, glabrous on the outer, sparingly villose on the inner surface, reflexed after anthesis; stamens 20; anthers pale pink; styles 2–4. Fruit ripening the middle of October, on long slender reddish pedicels, in drooping few-fruited clusters, oblong-obovate, rounded at the apex, gradually narrowed from below the middle, abruptly compressed at the often oblique base and decurrent on the pedicels; calyx little enlarged, with a very narrow deep cavity, and spreading closely appressed persistent lobes, flesh thin, juicy, pale yellow; nutlets 3–5, acute at the ends or narrowed and rounded at the base, ridged on the back, with a low grooved ridge, 7–8 mm long, and 4–5 mm wide.

A tree sometimes 7 m high, with a short trunk 2–2.5 dm in diameter, erect branches forming a broad open head, and stout zigzag glabrous branchlets, light orange-yellow and marked by large pale lenticels when they first appear, becoming light orange color and lustrous in their first season, and armed with numerous nearly straight or curved spines 2.5–6 cm long and becoming dark gray or purple in their second or third seasons.

Brighton, near Rochester, B. H. Slavin (№ 2, type), October 14, 1903, and June 4, 1905.

Crataegus dewingii n. sp.

Leaves ovate to oval or rarely orbicular, acuminate, abruptly concave-cuneate at the entire base, finely doubly serrate above, with straight glandular teeth, and very slightly divided above the middle into 4 or 5 pairs of small acuminate lobes; deeply tinged with red when they unfold, about half grown when the flowers open at the end of May and then thin, yellow-green and glabrous with the exception of a few caducous hairs along the upper side of the midribs, and at maturity thin but firm in texture, dark green and lustrous on the upper surface, pale bluish green on the lower surface, 5–7 cm long and 4–5 cm wide, with stout yellow midribs, and thin primary veins arching obliquely to the points of the lobes; petioles slender, wing-margined at the apex, villose on the upper side while young, slightly glandular, 2.5–3 cm in length; leaves on vigorous shoots often oblong-ovate, more coarsely serrate, deeply divided into broad lateral lobes and 5–6 cm long. Flowers 1.8–2 cm in diameter, on slender glabrous pedicels, in 4–13-flowered lax corymbs, with broadly obovate to linear-obovate caducous bracts and bractlets fading brown; calyx-tube broadly obconic, glabrous, the lobes abruptly narrowed from the base, broad, acuminate, entire or slightly serrate near the middle, glabrous on the outer, sparingly villose on the inner surface, reflexed after anthesis; stamens 20; anthers pink; styles 4 or 5, surrounded at the base by a narrow ring of pale tomentum. Fruit ripening from the middle to the end of September, on stout red pedicels, in few-fruited drooping clusters, short-oblong, full and rounded at the ends, crimson, pruinose, becoming lustrous, marked by many small pale dots, 1–1.2 cm in diameter; calyx little enlarged, with a broad deep cavity, and spreading often incurved persistent lobes villose on the upper side; flesh thin, hard, dry and mealy; nutlets 4 or 5, gradually narrowed and rounded at the ends, ridged on the back, with a high narrow ridge, 7–8 mm long, and 4–5 mm wide.

A tree sometimes 8 m high, with a trunk 2 m long and 1.5 dm in diameter, covered with ridged and scaly gray bark, drooping and widespreading branches, and slender nearly straight glabrous branchlets dull red and marked by pale lenticels when they first appear, becoming bright chestnut-brown and lustrous in their first season and pale gray-brown the following year, and armed with few slender nearly straight chestnut-brown shining spines 3–3.5 cm long.

Open thickets in clay soil, Belfast, Allegany co., Baxter and Dewing (№ 285, type), September 14, 1904, May 29 and September 14, 1905; (№ 212X), May 30, 1903, September 14, 1904, September 19, 1905.

This interesting species, which is doubtfully referred to this group, is named for Mr Vincent Dewing who with Mr Baxter has carefully studied and industriously collected the large number of species of Crataegus growing in several of the towns of the upper Genesee valley in New York.

III PRUINOSAE

Fruit subglobose to short-oblong or obovate, red or green, often slightly 5-angled, generally pruinose especially during the summer; flesh hard and dry; leaves thin to subcoriaceous.

Stamens 20
- Anthers rose color, pink or red
  - Leaves glabrous
    - Corymbs glabrous
      - Corymbs many-flowered.....1 C. pruinosa
      - Corymbs few-flowered
        - Leaves cuneate at the base; fruit conspicuously 5 angle and mammillate below the middle.....2 C. arcana
        - Leaves often rounded at the broad base; fruit not mammillate
          - Leaves subcoriaceous; flowers not less than 1.8 cm in diameter, on long pedicels.....3 C. gracilis
          - Leaves thin; flowers 1.2–1.4 cm in diameter, on short pedicels.....4 C. amoena
    - Corymbs villose.....5 C. clintoniana
  - Young leaves roughened above by short white hairs.....6 C. oblita
- Anthers yellow
  - Leaves glabrous .....7 C. cognata
  - Leaves slightly hairy above while young
    - Leaves oblong-ovate; corymbs many-flowered; spines short and stout .....8 C. formosa
    - Leaves broadly ovate; corymbs few-flowered; spines long and slender .....9 C. leiophylla

Stamens 10 or less
Anthers rose color, purple or pink
Leaves glabrous
Fruit short-oblong
Leaves slightly lobed; fruit cherry-red, pruinose, 1–1.2 cm in diameter.....10 C. pulchra
Leaves deeply lobed; fruit crimson, not pruinose, 1.5–1.7 cm in diameter.....11 C. radiata
Fruit obovate .....12 C. aridula
Leaves villose above while young
Fruit obovate
Flowers not more than 1.6 cm in diameter, in very compact 4-6-flowered corymbs; stamens usually 5; anthers dark rose color .....13 C. congestiflora
Fruit subglobose .....15 C. maineana
Flowers at least 2cm in diameter, in broad loose corymbs; stamens 10; anthers pink.....14 C. plana
Fruit subglobose.....15 C. maineana
Leaves scabrate above while young
Leaves thick
Leaves blue-green
Stamens 10; fruit short-oblong to obovate..16 C. placiva
Stamens 5; fruit obovate.....17 C. tortuosa
Leaves yellow-green .....18 C. xanthophylla
Leaves thin
Leaves blue-green
Flowers in 2–8-flowered compact corymbs; fruit subglobose, pruinose.....19 C. implicata
Flowers in wide lax- many-flowered corymbs; fruit oblong-obovate, not pruinose.....20 C. promissa
Leaves yellow-green
Leaves scabrate at maturity
Flowers not more than 1.5 cm in diameter; calyx-lobes glabrous; fruit short-oblong, on drooping pedicels.....
.....21 C. strigosa
Flowers at least 2 cm in diameter; calyx-lobes villose on the inner surface; fruit obovate, on erect pedicels.....
.....22 C. barryana
Leaves glabrous at maturity
Anthers dark rose color; calyx-lobes short and broad; fruit on long drooping pedicels.....23 C. foliata
Anthers pale pink; calyx-lobes long and slender; fruit on shorter pedicels .....24 C. cruda
Anthers yellow; flowers on villose pedicels, in compact 5–7-flowered corymbs; styles hirsute to the middle; young leaves scabrate.....
.....25 C. inusitula

Crataegus pruinosa K. Koch

Verhandl. Preuss. Gart. Verein, neue Reihe 1. 246 (1854). Sargent, Silva N. Am. XIII. 61, t. 648; Man. 411, f. 331; Acad. Sci. Phila. Proc. 585 (1905).

Buffalo, J. Dunbar (№ 2, 6 and 45), 1902–5.

Crataegus arcana Beadle

Bilt Bot. Studies 1. 122 (1902). Sargent, Bot. Gazette XXXV. 101; Acad. Sci. Phila. Proc. 588 (1905).

Niagara Falls, J. Dunbar and C. S. Sargent (№ 24), September 16, 1904; J. Dunbar, May 28, 1905; also eastern Pennsylvania to western North Carolina.

Crataegus gracilis n. sp.

Leaves ovate, acuminate, rounded or abruptly cuneate at the broad entire base, sharply doubly serrate above, with straight glandular teeth, and divided into 3 or 4 pairs of short acuminate lateral lobes; when they unfold deeply tinged with red and glabrous with the exception of occasional caducous hairs along the upper side of the midribs, nearly fully grown when the flowers open at the end of May and then membranaceous and dull yellow-green, and at maturity subcoriaceous, dark blue-green, smooth and lustrous on the upper surface, paler on the lower surface, 5–6 cm long and 3.5–4 cm wide, with slender yellow midribs and 4 or 5 pairs of thin primary veins; petioles slender, slightly wing-margined at the apex, glandular, with occasional scattered dark glands, 8–10 mm long; stipules linear or linear-falcate, glandular, fading rose color, deciduous; leaves on vigorous shoots coriaceous, nearly triangular, mostly truncate at the base, coarsely serrate, deeply lobed, often 8–9 cm long and 9–10 cm wide, with stout reddish midribs, broadly margined conspicuously glandular petioles 2–2.5 cm in length, and foliaceous lunate coarsely serrate stipules. Flowers about 1.8 cm in diameter, on long slender glabrous pedicels, in compact 6–10-flowered corymbs, with linear glandular red bracts and bractlets; calyx-tube broadly obconic, glabrous, the lobes abruptly narrowed from broad bases, slender, acuminate, glabrous, entire or occasionally minutely glandular toward the base; stamens 20; anthers pale pink, filaments persistent on the fruit; styles 3–5, surrounded at the base by tufts of long pale hairs. Fruit ripening late in September, on slender drooping pedicels, in few-fruited clusters, depressed-globose, green tinged with red or orange color pruinose, about 1 cm in diameter; calyx

prominent, with a short tube, a broad shallow cavity, and wide-spreading and slightly incurved lobes, dark red on the upper side toward the base; flesh thin, dry, greenish yellow; nutlets 3–5, full and rounded at the base, narrowed and rounded at the apex, ridged on the back, with a high rounded ridge, dark colored, 8–9 mm long, and about 5 mm wide.

A shrub 2–3 m high, with numerous ascending stems spreading into broad thickets, and covered below with ashy gray bark, and stout slightly zigzag glabrous branchlets green tinged with red when they first appear, soon becoming bright chestnut-brown and lustrous and marked by large pale lenticels, and armed with many stout nearly straight chestnut-brown shining spines 4–6 cm long and usually pointing toward the base of the branch.

Niagara Falls, J. Dunbar and C. S. Sargent (№ 26, type), September 16, 1904, J. Dunbar, May 28, 1905.

Crataegus amoena n. sp.

Leaves ovate, acute or acuminate, concave-cuneate or rounded at the entire base, finely doubly serrate above, with straight or incurved glandular teeth, and divided above the middle into 2 or 3 pairs of broad acute lobes; slightly tinged with red when they unfold, about half grown when the flowers open at the end of May and then thin, smooth and light yellow-green above and pale below, and at maturity thin but firm in texture, dark bluish green on the upper surface, pale on the lower surface, 4–6 cm long, 3.5–5 cm wide, with slender midribs often tinged with rose in the autumn, and 3 or 4 pairs of obscure primary veins; petioles slender, slightly wing-margined at the apex, deeply grooved, sparingly glandular while young, 1.5–2.5 cm in length; stipules linear, glandular, fading brown, caducous; leaves on vigorous shoots rounded or cuneate at the broad base, 6–7 cm long and 5–6 cm wide. Flowers 1.2–1.4 cm in diameter, on short slender pedicles, in compact most 4–6 flowered corymbs; calyx-tube broadly obconic, the lobes gradually narrowed from wide bases, short, acuminate, generally entire; stamens 20; anthers creamy white suffused with pink; styles 3–5. Fruit ripening from the middle to the end of October, on stout erect pedicels, in few-fruited clusters, subglobose to short-oblong, dark red, pruinose, 1–1.2 cm in diameter; calyx prominent, with a broad deep cavity, and spreading lobes dark red on the upper side toward the base; flesh thin, hard, greenish yellow; nutlets 3–5, gradually narrowed and rounded at the ends, ridged on the back, with a high narrow rounded ridge, dark colored, about 7 mm long, and 5 mm wide.

A shrub 3–4 m high, with ascending and spreading stems covered below with dark red bark, and slender slightly zigzag branchlets olive-green deeply tinged with red when they first appear, becoming bright chestnut-brown and very lustrous and marked by occasional large dark lenticels in their first season and dull gray the following year, and armed with numerous slender nearly straight purple spines 4-6 cm long, and persistent and branched on old stems.

Niagara Falls, J. Dunbar and C. S. Sargent (#21, type), September 16, 1904, J Dunbar, May 28, 1905.

Crataegus clintoniana n. sp.

Leaves ovate, acuminate, cuneate or rounded at the entire base, finely and often doubly serrate above, with straight glandular teeth, and divided into 4 or 5 pairs of narrow acuminate lateral lobes; when they unfold tinged with red, sparingly villose on the upper surface and villose below along the midribs and veins and furnished with axillary tufts of matted pale hairs, nearly half grown when the flowers open about the 20th of May and then thin, light yellow-green, still sparingly hairy principally along the under side of the midribs and veins and pale bluish green below, and at maturity thin, yellow-green, smooth and glabrous on the upper surface and nearly glabrous on the lower surface, 4–5 cm long and 3.5–4 cm wide, with slender midribs, and usually 4 pairs of thin primary veins; petioles slender, slightly wing-margined at the apex, glabrous, sparingly glandular while young, 1–1.5 cm in length; leaves on vigorous shoots abruptly cuneate or rounded at the broad base, coarsely serrate, deeply lobed, often 6–7 cm long and broad, with stout broadly winged glandular petioles 2.5–3 cm in length. Flowers 2 cm in diameter, on slender villose pedicels, in compact mostly 5- or 6-flowered corymbs; calyx-tube narrowly obconic, glabrous, the lobes slender, acuminate, nearly entire, glabrous, reflexed after anthesis; stamens 20; anthers bright red; styles 3–5, generally 5, surrounded at the base by a broad ring of pale hairs. Fruit ripening early in October, on stout reddish pedicels, in few-fruited erect clusters, subglobose but often rather broader than high, distinctly angled, orange-red, lustrous, marked by numerous small pale dots, 1.2–1.4 cm in diameter; calyx prominent, with a short tube, a broad deep cavity, and small spreading or reflexed lobes persistent on the ripe fruit; flesh thick, yellowish green, dry and mealy; nutlets usually 5, narrowed and rounded at the ends, slightly grooved on the back, 6–7 mm long, and 4–5 mm wide.

A narrow shrub thin in habit, 5–6 m high, with many small stems covered with dark gray scaly bark, spreading and ascending branches, and slender nearly straight branchlets glabrous and orange-green slightly tinged with red when they first appear, becoming red-brown and lustrous during their first season and dull gray-brown the following year, and armed with numerous, thin, straight, light chestnut-brown shining, ultimately dull gray spines 4–5 cm in length, persistent, very numerous and becoming branched on the old stems.

Low wet woods, Buffalo; J. Dunbar (# 8, type), May 21 and September 29, 1903, September 26, 1905. Not common.

This handsome and distinct species is named in memory of George W. Clinton (1807–85), a distinguished judge of the Supreme Court of the city of Buffalo and a critical student of the plants growing in the neighborhood of that city.

Crataegus oblita n. sp.

Leaves oblong-ovate to nearly triangular, acuminate, rounded, subcordate or abruptly concave-cuneate at the broad entire or glandular base, finely doubly serrate above, with straight glandular teeth, and divided often only above the middle into 4 or 5 pairs of wide acuminate spreading lobes; about one third grown when the flowers open the 25th of May and then membranaceous, yellow-green, roughened above by short white hairs and pale and glabrous below, and at maturity thin but firm in texture, dull blue-green, smooth and lustrous on the upper surface, pale bluish green on the lower surface, 5–6.5 cm long and 4.5–5 cm wide, with thin yellow midribs, and slender primary veins extending obliquely to the points of the lobes; petioles very slender, slightly wing-margined at the apex, sparingly villose while young on the upper side, soon glabrous, 3–4 cm in length; leaves on vigorous shoots subcoriaceous, truncate or rounded at the base, more coarsely serrate and more deeply lobed, often 5.5–6 cm long and wide. Flowers 1.5–1.6 cm in diameter, on long slender glabrous pedicels, in lax mostly 4–6-flowered corymbs; calyx-tube narrowly obconic, glabrous, the lobes gradually narrowed from broad bases, wide, acuminate, entire or occasionally slightly toothed near the middle, glabrous, reflexed after anthesis; stamens 20; anthers rose color; styles 4 or 5, surrounded at the base by a narrow ring of pale hairs. Fruit ripening the end of September, on slender drooping pedicels, in few-fruited clusters, obovate, full and rounded at the apex, slightly narrowed to the rounded base, crimson, pruinose, finally becoming lustrous, marked by large pale

dots, 9–11 mm long and 9–10 mm in diameter; calyx enlarged and prominent, with a broad deep cavity, and spreading and appressed usually persistent slightly serrate lobes dark red on the upper side below the middle; flesh thin, yellow-green, dry and mealy; nutlets 4 or 5, thin and compressed at the rounded ends, rounded and slightly grooved or irregularly ridged on the back, 6–7 mm long, and 4–5 mm wide.

A shrub 4–5 m high, with small ascending stems covered with pale gray bark, spreading branches and slender slightly zigzag glabrous branchlets, dark reddish brown and marked by pale lenticels when they first appear, becoming dark chestnut-brown and very lustrous in their first season and dull red-brown the following year, and armed with slender straight slightly curved dull chestnut-brown spines 3–5 cm long.

Borders of thickets in low moist soil, Buffalo, J. Dunbar (✱ 16, type), June 1, 1904, May 28, 1906, J. Dunbar and C. S. Sargent. September 24, 1904.

Crataegus cognata Sargent

Rhodora V. 58 (1903).

Buffalo, J. Dunbar (✱ G), October 1901, May 26 and October 6, 1902, May 21 and September 29, 1903; (✱ 23), September 30, 1904, June 12, 1905; (✱ 38), June 12 and September 26, 1905; Niagara Falls, J. Dunbar and C. S. Sargent (✱8), September 16, 1904, J. Dunbar, June 12, 1905; (✱ 15), J. Dunbar and C. S. Sargent, September 16, 1904, J. Dunbar, May 26, 1905; near Hemlock lake, Livingston co., Henry T. Brown (✱ 15 and 26), May and October 1906; also southern and western New England and eastern New York.

Crataegus formosa Sargent

Rochester Acad. Sci. Proc. IV. 101 (1903).

Buffalo, J. Dunbar, October 6, 1902, September 26, 1905, May 28, 1906, Niagara Falls, J. Dunbar (✱ 1), October 7, 1902, May 22, 1903; also at Rochester, New York.

Crataegus leiophylla Sargent

Rochester Acad. Sci. Proc. IV. 99 (1903).

Buffalo, J. Dunbar, September 26, 1905, May 25, 1906; also at Rochester, New York.

The anthers in this species were first described as pale yellow; further observations show that they are slightly tinged with pink.

Crataegus pulchra n. sp.

Glabrous. Leaves ovate to oval, acuminate, rounded or occasionally cuneate at the entire base, finely often doubly serrate above, with straight glandular teeth, and divided very slightly above the middle into 3 or 4 pairs of short broad acuminate lobes; deeply tinged with red when they unfold, more than half grown when the flowers open at the end of May and then thin, yellow-green above and paler below, and at maturity thin, yellow-green, 4.5–5.5 cm long and broad, with slender yellow midribs, and obscure primary veins; petioles slender, slightly wing-margined sometimes nearly to the middle, glandular with minute dark glands, 2–2.5 cm in length. Flowers about 1.8 cm in diameter, on slender pedicels, in compact mostly 6–8-flowered corymbs, with linear acuminate glandular bracts and bractlets fading rose color; calyx-tube broadly obconic, the lobes slender, acuminate, entire or sparingly glandular toward the apex, reflexed after anthesis; stamens 10; anthers maroon; styles 2–4. Fruit ripening the middle of September, on short stout pedicels, in drooping 2–3-fruited clusters, short-oblong, full and rounded at the ends, cherry-red, pruinose, marked by small pale dots, 1–1.2 cm in diameter; calyx prominent, with a broad shallow cavity, and widespreading or closely appressed usually persistent lobes dark red on the upper side; flesh thin, yellow, dry or mealy; nutlets 2–4, narrowed and acute at the ends or rounded at the base, ridged on the back, with a narrow rounded ridge, light colored, about 8 mm long, and 5 mm wide.

A shrub 1–2.5 m high, with small stems spreading into thickets, and slender nearly straight branchlets orange-green tinged with red when they first appear, becoming chestnut-brown, lustrous and marked by small pale lenticels in their first season, and dark red-brown the following year, and armed with thin nearly straight purple ultimately gray-brown spines 3–5 cm long.

Niagara Falls, J. Dunbar and C. S. Sargent (✱ 25, type), September 16, 1904, J. Dunbar, May 28, 1905; Buffalo, (✱ 11) J. Dunbar, September 30, 1904, and May 28, 1905; (✱ 23), J. Dunbar and C. S. Sargent, September 16, 1904, J. Dunbar, May 28, 1905.

Crataegus radiata n. sp.

Glabrous. Leaves ovate, acuminate, cuneate or rounded at the entire base, coarsely doubly serrate above, with straight gland-tipped teeth, and divided into 3 or 4 pairs of narrow acuminate spreading lateral lobes; nearly half grown when the flowers open about the

20th of May and then thin, smooth and yellow-green above and pale blue-green below, and at maturity thin but firm, dark dull blue-green on the upper surface and pale on the lower surface, 5–7 cm long and 4–5 cm wide, with prominent yellow midribs, and slender primary veins arching obliquely to the points of the lobes; petioles slender, wing-margined to below the middle, glandular, with persistent glands, often rose color in the autumn, 1.5–2 cm in length; leaves on vigorous shoots subcoriaceous, rounded at the broad base, more coarsely serrate and more deeply lobed and sometimes 8–9 cm long and broad, with stout broadly winged conspicuously glandular petioles. Flowers 1.8–2 cm in diameter, on slender elongated pedicels, in loose usually 5- or 6-flowered long-branched corymbs; calyx-tube narrowly obconic, the lobes slender, acuminate, entire; stamens 9 or 10; anthers dark red; styles usually 4, surrounded at the base by a narrow ring of pale tomentum. Fruit ripening about the 1st of October, on stout reddish pedicels, in few-fruited drooping clusters, short-oblong, full and rounded at the ends, crimson, lustrous, marked by many small dark dots, 1.5–1.7 cm in diameter; calyx little enlarged, with a narrow deep cavity, and closely appressed lobes persistent on the ripe fruit; flesh thick, yellow, dry and mealy; nutlets usually 4, narrowed at the ends, rounded at the base, ridged on the back, with a broad grooved ridge, light colored, 6–7 mm long, and 4–5 mm wide.

A shrub 4–6 m high, with numerous small stems covered with dark gray scaly bark, small spreading branches, and slender zigzag branchlets dark orange-green when they first appear, becoming bright chestnut-brown and very lustrous in their first season and dull red-brown the following year, and armed with many slender slightly curved purple shining spines 3.5–4 cm long, persistent and very numerous on old stems.

Buffalo, J. Dunbar (№ 3, type), October 6, 1902, May 21 and September 29, 1903, J. Dunbar and C. S. Sargent, September 24, 1904.

Crataegus aridula n. sp.

Glabrous. Leaves ovate, acuminate, cuneate or concave-cuneate at the entire base, sharply doubly serrate above, with straight glandular teeth, and divided into 5 or 6 pairs of narrow acuminate spreading lobes; nearly full grown when the flowers open during the first week of June and then thin, dark yellow-green, smooth above and pale below, and at maturity thin, dark bluish green on the upper surface, pale on the lower surface, 4–5 cm long and

3.5–4.5 wide, with thin midribs and primary veins; petioles slender, slightly wing-margined at the apex, glandular, with minute scattered glands, 2–3 cm in length; leaves on vigorous shoots deltoid to rhombic, thin, coarsely serrate, often 6–7 cm long and broad, with slender wing-margined conspicuously glandular petioles. Flowers on long slender pedicels, in 5–7-flowered compact corymbs, with linear to linear-obovate glandular bracts and bractlets fading rose color; calyx-tube broadly obconic, the lobes gradually narrowed from the base, slender, acuminate, entire or occasionally sparingly dentate below the middle; stamens 10; anthers red; styles 2 or 3. Fruit remaining hard and dry in the autumn, obovate, dark red, marked by many large pale dots, pruinose, about 1 cm long and 8–9 mm wide; calyx prominent, with a long tube, a deep narrow cavity, and spreading persistent lobes; flesh thin, yellowish green; nutlets 2 or 3, rounded at the base, acute at the apex, ridged on the back, with a low rounded ridge, light colored, 7–8 mm long, and 4–5 mm wide.

A shrub, with slender nearly straight branchlets, olive-green tinged with red when they first appear, becoming light chestnut-brown and lustrous in their first season and ultimately dark gray-brown, and armed with straight slender dark purplish spines 2.5–3 cm in length.

Niagara Falls, J. Dunbar (№ 3, type), October 7, 1902, and June 1, 1904.

Crataegus congestiflora n. sp.

Leaves ovate, acuminate, rounded or abruptly cuneate at the entire base, finely doubly serrate above, with straight glandular teeth, and slightly divided into 5 or 6 pairs of broad spreading acuminate lateral lobes; more than half grown when the flowers open during the last week of May and then membranaceous, light yellow-green and covered above by short white hairs and pale bluish green and glabrous below, and at maturity thin, dark blue-green, dull and glabrous on the upper surface and paler blue-green on the lower surface, 4–6 cm long and 3–4.5 cm wide, with thin yellow midribs and primary veins; petioles slender, slightly wing-margined at the apex, sparingly glandular, 1.5–2.5 cm in length; leaves on vigorous shoots short-pointed at the apex, rounded at the broad base, more coarsely serrate and more deeply lobed, about 6–7 cm long and 5–6 cm wide. Flowers 1.4–1.5 cm in diameter, on slender glabrous pedicels, in very compact mostly 4–6-flowered corymbs;

calyx-tube narrowly obconic, glabrous, the lobes wide, acuminate, entire or occasionally irregularly toothed toward the apex, glabrous, bright red above the middle, reflexed after anthesis; stamens 5–8, usually 5; anthers dark rose color; styles 3 or 4, surrounded at the base by a wide ring of pale tomentum. Fruit ripening the end of October, on slender reddish pedicels, in 4- or 5-fruited spreading clusters, somewhat obovate, full and rounded at the apex, slightly narrowed and sometimes decurrent on the pedicel at the base, marked by many pale dots, crimson, pruinose, 1–1.2 cm long and 9–11 mm wide; calyx little enlarged, without a tube, with a narrow shallow cavity, and spreading persistent lobes often serrate toward the apex and dark red on the upper side; flesh thin, yellow, dry and mealy; nutlets 2 or 3, narrowed and rounded at the ends or acute at the apex, ridged on the back, with a broad grooved ridge, 6–7 mm long, and 4–5 mm wide

A shrub 3–4 m high, with small stems covered with dark gray bark, ascending and spreading branches, and very slender zigzag glabrous branchlets light green, slightly tinged with red when they first appear, becoming bright chestnut-brown and very lustrous in their first season and dull reddish brown the following year, and armed with numerous thin slightly curved light brown shining spines, becoming purple and ultimately gray, and 2.5–3 cm long.

Buffalo, J. Dunbar (✻19, type), September 30, 1904, May 27, 1905; (✻31), September 30, 1904; (✻44), September 26, 1905.

Crataegus plana n. sp.

Leaves oblong-obovate, acuminate, rounded or rarely cuneate at the entire base, finely doubly serrate above, with straight glandular teeth, and slightly divided above the middle into 3 or 4 pairs of small spreading acuminate lobes; tinged with red and sparingly villose on the upper surface and in the axils of the veins below when they unfold, almost fully grown and nearly glabrous when the flowers open about the 20th of May and then thin, light yellow-green and smooth above and bluish green below, and at maturity thin, glabrous, dark green and somewhat lustrous on the upper surface and pale blue-green on the lower surface, 4–5 cm long and 3–4 cm wide, with slender yellow midribs, and thin primary veins extending obliquely to the points of the lobes; petioles slender, wing-margined often to the middle, slightly glandular while young, 1.5–2 cm in length; leaves on vigorous shoots subcoriaceous, broadly ovate to suborbicular, rounded or cordate at the base, more

coarsely serrate and more deeply lobed, and sometimes 6–7 cm wide, with stout broadly winged petioles glandular throughout the season. Flowers 2 cm in diameter, on slender glabrous pedicels, in usually 5–7-flowered corymbs, with linear glandular bracts and bractlets fading rose color; stamens 10, filaments persistent on the ripe fruit; anthers pale pink; styles 3–5, surrounded at the base by a broad ring of pale hairs. Fruit ripening from the first to the middle of October, on slender pedicels, in few-fruited erect clusters, short-oblong, somewhat rounded at the base, bright green when fully grown, crimson at maturity, pruinose, marked by many small pale dots; calyx prominent, without a tube, with a broad deep cavity, and widespreading persistent lobes dark red on the upper side below the middle; flesh thin, yellow-green, hard, dry and mealy; nutlets 3–5, rounded at the ends, rounded and slightly grooved on the back, light colored, 5–6 mm long, and about 4 mm wide.

A shrub 3–4 m high and broad, with several stout erect stems covered with dark scaly bark, small spreading and ascending branches, and very slender glabrous branchlets, light chestnut-brown and lustrous in their first season, dark dull reddish brown the following year, and armed with numerous slender nearly straight chestnut-brown and shining, ultimately dark gray spines 3–4 cm long.

Buffalo, J. Dunbar (✱ 4, type), October 6, 1902, May 21, 1903; near Hemlock lake, Livingston co., H. T. Brown (✱ 3), May and October 1906.

Crataegus maineana Sargent

Rochester Acad. Sci. Proc. IV. 106 (1903).

Buffalo, J. Dunbar (✱ D), September 25, 1901, May 28, 1906; Niagara Falls, J. Dunbar, September 28, 1905, May 28, 1906; also near Rochester, New York.

Crataegus placiva n. sp.

Leaves ovate, acuminate, rounded, truncate or abruptly concave-cuneate at the broad entire or glandular base, finely doubly serrate above, with straight glandular teeth, and divided into 2 or 3 pairs of short broad acuminate lateral lobes; deeply tinged with red when they unfold, nearly fully grown when the flowers open at the end of May, and then thin, yellow-green and roughened above by short white hairs and pale and slightly hairy in the axils of the veins below, and at maturity thick, glabrous, smooth, dark blue-

green on the upper surface, pale on the lower surface, and 4–5 cm long and broad, with slender midribs and 3 or 4 pairs of thin primary veins; petioles slender, slightly wing-margined at the apex, glandular throughout the season, often tinged with red in the autumn, 2–3 cm in length; stipules linear, glandular, fading brown, caducous; leaves on vigorous shoots subcoriaceous, truncate at the base, coarsely serrate, more deeply lobed and often 7–8 cm long and wide. Flowers 2 cm in diameter, on elongated slender glabrous pedicels, in compact usually 5- or 6-flowered corymbs, with linear to linear-obovate glandular bracts and bractlets; calyx-tube broadly obconic, glabrous, the lobes short, slender, acuminate, glabrous, entire; stamens 10; filaments persistent on the ripe fruit; anthers purplish red; styles 3 or 4, surrounded at the base by a broad ring of long matted white hairs. Fruit ripening from the first to the middle of October, short-oblong, full and rounded at the ends or obovate and slightly narrowed at the base, bright orange-red, pruinose, marked by small pale dots, 1–1.2 cm in diameter; calyx prominent, without a tube, with a broad shallow cavity, and widespreading persistent lobes dark red on the upper side below the middle; flesh thin, yellow, dry and mealy; nutlets 3 or 4, narrow and rounded at the ends, slightly ridged on the back, with a low rounded ridge, about 7 mm long, and 4–5 mm wide.

A shrub sometimes 5 m high, with ascending stems covered with dark gray scaly bark, spreading branches, and slender zigzag glabrous branchlets dark orange-green more or less deeply tinged with red when they first appear, becoming dull chestnut-brown and marked by small pale lenticels in their first season and dull reddish brown the following year, and armed with slender slightly curved shining spines 5–6 cm long, persistent and very numerous on old stems and branches.

Buffalo, J. Dunbar (✱ 22, type), September 30, 1904, May 28, 1905; (✱ 27), September 30, 1904, May 28, 1906.

Crataegus tortuosa n. sp.

Leaves oblong-ovate, abruptly cuneate or rarely rounded at the entire base, finely doubly serrate above, with straight or incurved glandular teeth, and slightly divided into 4 or 5 pairs of broad acuminate spreading lobes, about half grown when the flowers open at the end of May and then membranaceous, yellow-green, slightly roughened above by short white hairs and glabrous below, and at maturity thick, blue-green, smooth and glabrous on the upper sur-

face, 5–6.5 cm long and 4.5–5 cm wide, with stout yellow midribs sometimes tinged with rose color in the autumn, and thin remote primary veins extending to the points of the lobes; petioles stout, wing-margined at the apex, sparingly glandular early in the season, tinged with rose color in the autumn, 2–4 cm in length; leaves on vigorous shoots usually broader and rounded or cordate at the base, more deeply lobed and sometimes 6–7 cm long and wide. Flowers on short slender glabrous pedicels, in compact 3–8, usually 5-flowered corymbs, with small linear rose colored bracts and bractlets; calyx-tube narrowly obconic, the lobes short and broad, minutely serrate near the middle, glabrous, red and glandular at the acuminate apex, reflexed after anthesis; stamens usually 5; anthers purplish red; styles 2–4, surrounded at the base by a broad ring of long pale hairs. Fruit ripening the end of September, on stout drooping reddish pedicels, in few-fruited clusters, obovate, full and rounded at the apex, abruptly narrowed at the base, bright orange-red, pruinose, marked by numerous pale dots, lustrous, 1–1.2 cm long, and 8–10 mm wide; calyx-tube little enlarged, with a broad shallow cavity, and narrow spreading lobes dark red on the upper side below the middle, their tips incurved or more often deciduous from the ripe fruit; nutlets 2 or 3, narrow and rounded at the ends, prominently ridged on the back, with a broad deeply grooved ridge, light colored, 7–8 mm long, and 4–5 mm wide.

A shrub sometimes 5–6 m high, with stout stems, very tortuous horizontal or ascending branches, and slender slightly zigzag glabrous branchlets, dark orange-green when they first appear, becoming bright chestnut-brown and marked by dark lenticels in their first season and dull reddish brown the following year, and armed with numerous stout nearly straight bright chestnut-brown shining ultimately dull gray spines 2–3 cm long.

Buffalo, J. Dunbar, (✻ 25, type), September 30, 1904, May 28 and September 26, 1905; J. Dunbar and C. S. Sargent (✻ 29), September 30, 1904; (✻ 17), September 24, 1904, J. Dunbar, May 28, 1905.

Crataegus xanthophylla n. sp.

Leaves broadly ovate, acuminate, rounded or cuneate at the entire or glandular base, sharply doubly serrate, with straight glandular teeth, and divided above the middle into 3 or 4 small acuminate lobes; nearly half grown when the flowers open at the end of May and then thin, light yellow-green and roughened above by short

white hairs and pale blue-green and glabrous below, and at maturity thick and firm to subcoriaceous, glabrous, smooth and dark yellow-green on the upper surface, pale yellow-green on the lower surface, 6–8 cm long and 5–7 cm wide, with stout yellow midribs and 4 or 5 pairs of slender primary veins; petioles stout, slightly wing-margined at the apex, glandular, with minute persistent glands, often rose color in the autumn, 2–3.5 cm in length. Flowers 1.5 cm in diameter, on slender glabrous pedicels, in compact usually 5–7-flowered corymbs; calyx-tube broadly obconic, glabrous, the lobes short and broad, acuminate, glabrous, coarsely glandular serrate above the middle, reflexed after anthesis; stamens 10; anthers red; styles 3 or 4, surrounded at the base by a broad ring of pale tomentum. Fruit ripening early in October, on stout drooping dark red glabrous pedicels, in few-fruited clusters, short-oblong, full and rounded at the ends, orange-red, slightly pruinose, marked by small pale dots, 1–1.2 cm long; calyx little enlarged, with a broad shallow cavity, and spreading persistent glabrous lobes dark red on the upper side below the middle; nutlets 3 or 4, acute at the ends, ridged on the back, with a narrow ridge, dark colored, 7–8 mm long, and about 4 mm wide.

A shrub 5–6 m high, with numerous slender spreading stems covered with pale gray bark, small ascending branches, and slender slightly zigzag glabrous branchlets, dark orange-green and marked by small pale lenticels when they first appear, becoming bright red-brown the following year, and armed with a few slender shining spines 2.5–3 cm long.

Buffalo, J. Dunbar (№ 1, type), October 6, 1902, May 26, 1906.

Crataegus implicata n. sp.

Leaves ovate to oval, acuminate and short-pointed at the apex, rounded and cuneate at the entire base, finely often doubly serrate above, with straight glandular teeth, and slightly divided into 4 or 5 pairs of small acuminate spreading lobes; nearly fully grown when the flowers open at the end of May and then yellow-green and slightly roughened above by scattered white hairs, and at maturity membranaceous, dark bluish green and smooth on the upper surface, pale blue-green on the lower surface, 3.5–4.5 cm long and 3–4 cm wide, with thin midribs, and slender primary veins; petioles very slender, sparingly glandular through the season, 1–2.5 cm in length; stipules linear to linear-falcate, glandular-serrate, fading brown, persistent; leaves on vigorous shoots subcoriaceous, broadly ovate,

more deeply lobed, often 5 cm long and wide, with foliaceous lunate coarsely serrate persistent stipules. Flowers 1.3–1.5 cm in diameter, on slender glabrous pedicels, in very compact mostly 5- or 6-flowered corymbs, with linear glandular bracts and bractlets; calyx-tube narrowly obconic, glabrous, the lobes slender, acuminate, nearly entire, red and glandular at the apex, reflexed after anthesis; stamens 5–8; anthers dark rose color; styles 3 or 4, surrounded at the base by a narrow ring of pale tomentum. Fruit ripening at the end of September, on short dark red pedicels, in usually 1–3-fruited drooping clusters, subglobose to ovate, pruinose, marked by many small pale dots, 1–3 cm long, 1–1.1 cm in diameter; calyx prominent, with a short tube, a small deep cavity, and spreading minutely serrate persistent lobes dark red on the upper side below the middle; flesh thick, yellow, dry and mealy; nutlets 3 or 4, narrowed and acute at the ends or rounded at the base, rounded or slightly ridged on the back, with a low ridge, light colored, 6–7 mm long, and 4 mm wide.

A thin intricately branched shrub sometimes 4 m high, with irregularly spreading stems covered at the base with dark gray bark, and slender glabrous branchlets dark orange-green tinged with red when they first appear, becoming in their first season bright chestnut-brown, lustrous and marked by numerous dark lenticels, dull gray-brown the following year, and armed with many straight purplish shining ultimately dull gray-brown spines 4–6 cm long and very numerous and branched on old stems.

Buffalo, J. Dunbar (# 39, type), May 28 and September 26, 1905.

Crataegus promissa n. sp.

Leaves oblong-ovate, acuminate, gradually narrowed and concave-cuneate at the entire or glandular base, sharply doubly serrate above, with straight or incurved glandular teeth, and deeply divided into 4–6 pairs of slender acuminate lobes; about one third grown when the flowers open the first of June and then thin, yellow-green and roughened above by short white hairs, and at maturity thin, glabrous, dark blue-green and smooth on the upper surface and pale blue-green on the lower surface, 5–5.8 cm long and 4–7 cm wide, with slender yellow midribs, and thin primary veins arching to the points of the lobes; petioles slender, wing-margined at the apex, sparingly glandular through the season, 4–4.5 cm in length; stipules linear-obovate, glandular, fading brown, caducous; leaves on vigorous shoots thick, cuneate at the base, coarsely serrate, deeply lobed,

sometimes 8–9 cm long and 7–8 cm wide, with broadly winged petioles and foliaceous lunate coarsely serrate persistent stipules. Flowers 1.6 cm in diameter, on slender elongated glabrous pedicels, in broad lax many-flowered corymbs, with linear to oblong-obovate glandular caducous bracts and bractlets; calyx-tube narrowly obconic, glabrous, the lobes long, narrow, acuminate, entire or slightly dentate below the middle, glabrous, reflexed after anthesis; stamens 5–7; anthers pink; styles 3 or 4, surrounded at the base by a broad ring of long white hairs. Fruit ripening at the end of September, on long slender drooping pedicels, in many-fruited clusters, oblong-obovate, tapering at the long base, crimson, lustrous, 1–1.2 cm long and 7–8 mm wide; calyx little enlarged, with a small shallow cavity, and reflexed often closely appressed elongated narrow lobes; flesh thin, dry and mealy; nutlets 3 or 4, rounded at the base, acute at thet apex, only slightly ridged on the back, 8–9 mm long, and about 4 mm wide.

A shrub 3–4 m high, with numerous stems covered with dark gray scaly bark, ascending branches, and slender zigzag glabrous branchlets bright orange-green more or less tinged with purple when they first appear, becoming light chestnut-brown and marked by large pale lenticels in their first season and pale gray-brown the following year, and armed with slender slightly curved light chestnut-brown shining spines 4–5 cm long, often pointing to the base of the branch, and compound and persistent on old stems.

Niagara Falls, J. Dunbar, (✱ 4, type), May 21 and September, 1903, June 1, 1904; J. Dunbar and C. S. Sargent (✱ 19), September 16, 1904, J. Dunbar, May 28, 1905, J. Dunbar (✱ 30), September 27, 1905, May 28, 1906.

Crataegus strigosa n. sp.

Leaves ovate, acuminate and long pointed at the apex, cuneate at the entire base, finely doubly serrate above, with straight glandular teeth, and divided into 5 or 6 pairs of small acuminate spreading lateral lobes; more than half grown when the flowers open at the end of May and then membranaceous, yellow-green and roughened above by short rigid white hairs and pale and glabrous below, and at maturity thin, yellow-green and scabrate on the upper surface and light yellow-green on the lower surface, 4–5 cm long and 3.5–4 cm wide, with stout midribs, and 5 or 6 pairs of prominent primary veins; petioles slender, slightly wing-margined at the apex, glandular throughout the season, 2–2.5 cm in length. Flowers

1.5 cm in diameter, on slender glabrous pedicels, in 5–8-, usually 5–6-flowered compact corymbs, the lowest peduncle generally from the axis of an upper leaf; calyx-tube narrowly obconic, glabrous, the lobes small, acuminate, entire or slightly glandular, glabrous, reflexed after anthesis; stamens 7–10; anthers purple; styles 3–5, surrounded at the base by a narrow ring of pale hairs. Fruit ripening early in October, on stout reddish drooping or spreading pedicels, in few-fruited clusters, short-oblong, full and rounded at the ends, scarlet, lustrous, marked by occasional dark dots, 1.3–1.4 cm long, 1–1.1 cm in diameter; calyx little enlarged, without a tube, with a narrow deep cavity, and small spreading or closely appressed persistent lobes, dark red on the upper side below the middle; flesh thin, yellow, dry and mealy; nutlets 3–5, narrowed and rounded at the ends or acute at the apex, ridged on the back, with a broad rounded or grooved ridge, light colored, 6–7 mm long, and about 4 mm wide.

A shrub 3–4 m high, with stout stems covered with dark scaly bark, ascending branches, and slender somewhat zigzag glabrous branchlets dark olive-green tinged with red when they first appear, becoming light chestnut-brown, lustrous and marked by many small dark lenticels in their first season, and armed with slender slightly curved light chestnut-brown shining spines 3–6 cm long.

Buffalo, J. Dunbar (# 20, type), September 30, 1904 and May 28, 1905.

Crataegus barryana n. sp.

Leaves broadly ovate, rounded or abruptly cuneate at the wide base, sharply doubly serrate, with straight glandular teeth, and very slightly divided into 4–6 pairs of small acuminate spreading lobes; nearly half grown when the flowers open about the 20th of May and then thin, dark yellow-green and roughened above by short white hairs and pale and glabrous below, and at maturity thin but firm in texture, dull yellow-green, scabrate and lustrous on the upper surface, glaucous on the lower surface, 6–8 cm long and 5–7 cm wide, with slender midribs, and thin primary veins extending obliquely to the points of the lobes; turning yellow in the autumn; petioles slender, narrowly wing-margined at the apex, slightly villose on the upper side while young, becoming glabrous, sparingly glandular, with persistent glands, 3–5 cm in length; leaves on vigorous shoots rounded or slightly cordate at the broad base, more coarsely serrate and more deeply lobed, often 8–9 cm long and broad. Flowers 2 cm in diameter, on stout glabrous pedicels, in compact mostly 7–10-flowered corymbs; calyx-tube narrowly ob-

conic, glabrous, the lobes slender, acuminate, entire or sparingly dentate, glabrous on the outer, slightly villose on the inner surface, reflexed after anthesis; stamens 7–10; anthers purple; styles 3 or 4, surrounded at the base by a narrow ring of pale tomentum. Fruit ripening the middle of October, on stout erect or spreading reddish pedicels, in few-fruited clusters, obovate, full and rounded at the apex, abruptly narrowed at the rounded base, crimson, marked by small pale dots, pruinose, about 1.8 cm long and 1.5 cm wide; calyx-little enlarged, with a narrow shallow cavity, and spreading persistent lobes villose above and dark red on the upper side below the middle; flesh thick, dark yellow, dry and mealy; nutlets usually 3, narrowed and rounded at the ends, prominently ridged on the back, with a broad grooved ridge, 7–8 mm long, and about 5 mm wide.

A shrub 4–5 m high, with small spreading or ascending branches covered with dark scaly bark and forming an open irregular head, and slender glabrous branchlets dark orange-brown and marked by numerous pale lenticels when they first appear, becoming dull red-brown in their first season and light gray-brown the following year, and armed with slender slightly curved light red-brown spines 3.5–4 cm long, long persistent and often becoming branched on old stems.

Rochester, common in moist heavy soil, J. Dunbar (# 37, type), October 14, 1902, May 20, 1903.

At the suggestion of Mr Dunbar this species is named for William C. Barry of Rochester, whose practical knowledge and business ability have been powerful in advancing horticulture in America.

Crataegus foliata n. sp.

Leaves crowded, ovate-oblong, acuminate, rounded or concave-cuneate at the base, coarsely doubly serrate, and slightly divided into 4 or 5 pairs of small acuminate spreading lobes; more than half grown when the flowers open at the end of May and then membranaceous, yellow-green, slightly roughened above by short white hairs and glabrous below, and at maturity thin but firm in texture, glabrous, smooth, yellow-green on the upper surface and paler on the lower surface, 5–7 cm long and 4–5 cm wide, with stout yellow midribs and slender primary veins; petioles stout, slightly wing-margined at the apex, glandular while young, often rose color in the autumn, 2.5–3 cm in length; leaves on vigorous shoots rounded or cordate at the broad base, coarsely serrate, more deeply lobed, 6–7 cm long

and broad, with short stout conspicuously glandular petioles. Flowers 1.5–1.6 cm in diameter, on long slender glabrous pedicles, in broad lax usually 8–12-flowered corymbs; calyx-tube narrowly obconic, glabrous, the lobes stout, broad, acuminate, slightly serrate usually only above the middle, glabrous on the outer, sparingly villose on the inner surface, reflexed after anthesis; stamens 7–10; anthers dark rose color; styles usually 3. Fruit ripening early in October, on long slender red drooping pedicels, in few-fruited clusters, obovate, crimson, lustrous, marked by numerous small pale dots, 1–1.2 cm long and 8–10 mm wide; calyx prominent, with a narrow deep cavity, and spreading or slightly appressed persistent lobes dark red on the upper side below the middle; flesh thin, yellow, dry and mealy; nutlets 3, narrowed and acute at the ends or rounded at the base, prominently ridged on the back, with a broad doubly grooved ridge, dark colored, 6–7 mm long, and about 4 mm wide.

A leafy shrub 3–4 m high, with ascending tortuous stems covered with dark scaly bark, stout glabrous branchlets purple and marked by large pale lenticels when they first appear, becoming light chestnut-brown and lustrous in their first season and light reddish brown the following year, and armed with stout straight or slightly curved bright chestnut-brown and shining ultimately dull gray-brown spines 1.5–4 cm. long.

Niagara Falls, J Dunbar and C. S. Sargent (# 20, type, and 27), September 16, 1904, J. Dunbar, May 28, 1905.

Crataegus cruda n. sp.

Leaves ovate, acuminate, rounded or abruptly or gradually narrowed and cuneate at the entire base, sharply doubly serrate above, with straight glandular teeth, and slightly divided often only above the middle into 4 or 5 pairs of small acuminate spreading lobes; nearly half grown when the flowers open during the last week of May and then membranaceous, yellow-green and scabrate above and paler and glabrous below, and at maturity thin but firm in texture, yellow-green, smooth, glabrous, 5–6 cm long and 4–4.5 cm wide; petioles very slender, slightly wing-margined at the apex, glabrous, 2.5–3 cm in length; leaves on vigorous shoots coarsely serrate, more deeply lobed, gradually narrowed below into broad-winged petioles, often 9–10 cm long and 6–7 cm wide. Flowers 1.2–1.4 cm in diameter, on very slender glabrous pedicels, in long-branched lax usually 7–10-flowered corymbs; calyx-tube narrowly obconic, glabrous, the lobes long, slender, acuminate, usually entire,

glabrous, reflexed after anthesis; stamens 5–8; anthers pale pink; styles 3 or 4, surrounded at the base by a broad ring of pale tomentum. Fruit ripening at the end of September, on slender drooping red pedicels, in few-fruited clusters, obovate, scarlet, lustrous, marked by small pale dots, 1.2–1.5 cm long and about 1 cm wide; calyx little enlarged, with a wide shallow cavity, and spreading and appressed persistent lobes dark red on the upper side below the middle; flesh thick, yellow, sweet and juicy; nutlets 3 or 4, acute at the ends, slightly ridged or grooved on the back, about 7 mm long, and 3 mm wide.

A shrub 3–4 m high, with dark gray stems, and stout zigzag glabrous branchlets dark orange-green when they first appear, becoming dark chestnut-brown or orange-brown and marked with numerous small dark lenticels in their first season and dull reddish brown the following year, and armed with very stout straight or slightly curved light red-brown shining spines 4–6 cm land and branched and persistent on old stems.

Niagara Falls, J. Dunbar (✱31, type), September 27, 1905, and May 28, 1906.

Crataegus inusitula n. sp.

Leaves broadly ovate, acuminate and long pointed at the apex, rounded or abruptly concave-cuneate at the broad entire base, coarsely doubly serrate above, with straight glandular teeth, and divided usually only above the middle into 3 or 4 pairs of short broad acuminate lobes; tinged with red when they unfold, not more than one third grown when the flowers open about the first of June and then bluish green and roughened above by short white hairs and pale and slightly villose in the axils of the veins below, and at maturity subcoriaceous, dark blue-green, smooth or scabrate on the upper surface, pale blue-green and glabrous on the lower surface, 4–7 cm long and 2.5–5 cm wide, with thin yellow midribs and 3 or 4, usually 3 pairs of slender primary veins; petioles slender, slightly wing-margined at the apex, sparingly hairy on the upper side while young, becoming glabrous, glandular, with minute persistent glands, 1.5–3.5 cm in length; leaves on vigorous shoots thicker, rounded at the broad base, more coarsely serrate and more deeply lobed, often 7–8 cm long and 6–7 cm wide. Flowers 1.5 cm in diameter, on long slender sparingly villose pedicels, in compact mostly 5–7-flowered corymbs, the lower peduncles from the axils of upper leaves; calyx-tube broadly obconic, glabrous, the lobes gradually narrowed from wide bases, short, acuminate, entire or irregularly dentate, glabrous,

reflexed after anthesis; stamens 10, filaments persistent on the fruit; anthers yellow; styles 3 or 4, densely coated with white hairs from the base nearly to the middle, surrounded by a narrow ring of pale tomentum. Fruit ripening at the end of September, on slender still slightly hairy pedicels, in few-fruited drooping clusters, short-oblong, full and rounded at the ends or slightly narrowed at the apex, dull greenish red, pruinose, marked by large pale dots, about 1 cm in diameter; calyx little enlarged, with a deep narrow cavity, and spreading lobes, their tips incurved and often deciduous from the ripe fruit; flesh thin, yellow, dry and mealy; nutlets 3 or 4, narrowed and rounded at the ends or acute at the apex, irregularly grooved or occasionally slightly ridged on the back, 6–7 mm long, and 4–5 mm wide.

A shrub, with slender nearly straight glabrous branchlets, green tinged with red when they first appear, becoming bright chestnut-brown, lustrous and marked by numerous pale lenticels in their first season and dull reddish brown the following year, and armed with slender slightly curved or straight chestnut-brown shining spines 2.5–3 cm long.

In moist soil, Chapinville, Ontario co., J. Dunbar and C. S. Sargent (# E, type), October 1, 1902, M. S. Baxter, May 30 and September 20, 1903.

This and Crataegus delawarensis Sargent are the only species of *Pruinosae* that have yet been seen with 10 stamens and yellow anthers. From C. delawarensis it differs in the scabrate young leaves and villose pedicels, and from all other species in the dense covering of hairs on the lower part of the styles.

IV TENUIFOLIAE

Fruit short-oblong to obovate, red or scarlet, lustrous; anthers rose color or pink; leaves thin, hirsute on the upper surface while young.

Stamens 10 or less
  Leaves yellow-green
    Leaves glabrous at maturity; pedicels glabrous
      Fruit usually short-oblong,
        Stamens 10; anthers pink
          Flowers 1.6 cm in diameter, in wide loose corymbs.....
          .....1 C. slavini
          Flowers not more than 1.2 cm in diameter, in compact corymbs .....2 C. boothiana
        Stamens 7–10; anthers dark rose color.....3 C. suavis
      Fruit obovate.....4 C. colorata
    Leaves scabrate at maturity; pedicels villose...5 C. rubicunda

Leaves blue-green
Leaves glabrous at maturity
Fruit short-oblong
Leaves oblong-ovate, deeply lobed, usually only above the middle; fruit often 1.4 cm in length.....6 C. ornata
Leaves broadly ovate, laterally lobed; fruit generally not more than 1 cm long.....7 C. bella
Leaves oval, only slightly lobed.....8 C. genialis
Fruit obovate.....9 C. tenuiloba
Leaves scabrate at maturity.....10 C. streeterae
Stamens 20
Leaves broadly ovate; flowers in compact corymbs; fruit short-oblong, in erect clusters.....11 C. conferta
Leaves oblong-ovate; flowers in wide long-branched corymbs; fruit obovate, in drooping clusters.....12 C. luminosa

Crataegus slavini n. sp.

Leaves oblong-ovate, acuminate, broad and rounded or gradually narrowed and cuneate at the base, finely doubly serrate, with straight glandular teeth, and divided into 5–8 pairs of widespreading often incurved acuminate lateral lobes; nearly half grown when the flowers open about the 25th of May and then thin, yellow-green and roughened above by short white hairs and pale and glabrous below, and at maturity thin but firm in texture, bright yellow-green, smooth and lustrous on the upper surface and pale and glaucous on the lower surface, 4.5–7 cm long and 4–5.5 cm wide, with stout midribs and slender primary veins arching obliquely to the points of the lobes; petioles slender, slightly wing-margined at the apex, glandular, with minute persistent glands, 2–3 cm in length; leaves on vigorous shoots thin, rounded or slightly cordate at the base, more deeply lobed, often 6–7 cm long and 5–6 cm wide. Flowers 1.5–1.6 cm in diameter, on long slender glabrous pedicels, in wide lax, mostly 8–10-flowered corymbs, the lower peduncles from the axils of upper leaves; calyx-tube narrowly obconic, glabrous, the lobes abruptly narrowed from broad bases, slender, acuminate, entire or occasionally obscurely dentate, glabrous, reddish, reflexed after anthesis; stamens 10; anthers pink; styles 3 or 4, surrounded at the base by a narrow ring of matted pale hairs. Fruit ripening from the first to the middle of October and persistent after the fall of the leaves, on slender reddish pedicels, in few-fruited drooping clusters, short-oblong or slightly obovate, somewhat angled, bright orange-red, lustrous, marked by numerous small pale dots, 1.3–1.4 cm long, and about 1 cm wide; calyx prominent, with a narrow deep cavity, and spreading and slightly incurved lobes, dark

red on the upper side below the middle, their tips often deciduous from the ripe fruit; flesh thick, yellow, sweet and succulent; nutlets 3 or 4, narrowed at the ends, acute at the apex, prominently ridged on the back, with a broad deeply grooved ridge, 6–7 mm long, and 4 mm wide.

A shrub 3–4 m high, with erect intricately branched stems covered with pale gray bark and spreading into broad thickets, and slender nearly straight glabrous branchlets, dark orange color and marked by many pale lenticels when they first appear, becoming dull reddish brown in their first season and dark gray-brown the following year, and armed with straight or slightly curved chestnut-brown shining spines 3–4 cm long.

Brighton near Rochester, B. H. Slavin (№ 1, type, and 4), October 12, 1903, May 24, 1904.

This species is named for Bernard Henry Slavin of Seneca park, Rochester, for many years a diligent and careful student and collector of Crataegus in western New York.

Crataegus boothiana n. sp.

Leaves ovate, acuminate and often long pointed at the apex, rounded at the base, finely often doubly serrate, with straight slender glandular teeth, and divided into 5 or 6 pairs of acuminate spreading lobes; tinged with red when they unfold, nearly half grown when the flowers open about the 20th of May and then membranaceous, yellow-green and roughened above by short white hairs and pale and glabrous below, and at maturity thin, light yellow-green, glabrous and lustrous on the upper surface and pale bluish green on the lower surface, 5–6 cm long and 4–4.5 cm wide, with slender midribs, and thin primary veins extending obliquely to the points of the lobes; petioles slender, slightly wing-margined at the apex, glabrous, glandular, with occasional minute scattered often persistent glands, 1–2.5 cm in length; leaves on vigorous shoots rounded or often cordate at the broad base, deeply lobed, with stout winged conspicuously glandular petioles. Flowers about 1.2 cm in diameter, on slender glabrous pedicels, in compact mostly 8–10-flowered corymbs; calyx-tube narrowly obconic, glabrous, the lobes slender, acuminate, entire or slightly toothed near the base, glabrous, red above the middle, reflexed after anthesis; stamens 10; filaments persistent on the fruit; anthers pink; styles 3, surrounded at the base by a narrow ring of pale tomentum. Fruit ripening the middle of September, on short reddish pedicels, in few-fruited drooping

clusters, short-oblong, full and rounded at the ends, bright orange-red, lustrous, marked by occasional small pale dots, 1–1.2 cm long and 8–9 mm wide; calyx prominent, with a broad shallow cavity, the lobes elongated, spreading, dark red on the upper side below the middle, their tips usually deciduous from the ripe fruit; flesh thin, yellow, slightly juicy; nutlets 3, narrowed and rounded at the base, acute at the apex, ridged on the back, with a narrow high ridge, 5–6 mm long, and 3–4 mm wide.

A shrub 2–2.5 m high, with small erect stems forming an open irregular head, and slender nearly straight glabrous branchlets light green tinged with red when they first appear, becoming dull reddish brown and marked by small pale lenticels in their first season and dull gray-brown the following year, and armed with stout or slender nearly straight purplish shining spines 2.5–3 cm long.

Wooded banks, near Rochester, J. Dunbar (✱132, type), September 8, 1902, May 16 and September 16, 1903; Murray, common, M. S. Baxter (✱133), October 11, 1902; Filmore, Baxter and Dewing (✱309), September 4, 1905.

At the suggestion of Mr Dunbar this species is named in memory of Charles Miller Booth, M. D. (October 12, 1830–January 30, 1906), a resident of Rochester during nearly the whole of his life and a careful student of the flora of western New York, especially of the mosses and grasses in which he was particularly interested.

Crataegus suavis n. sp.

Leaves ovate, acuminate, rounded or abruptly concave-cuneate at the entire base, doubly serrate above, with slender glandular teeth, and divided into 5 or 6 pairs of acuminate spreading lateral lobes; tinged with red and roughened above by short white hairs when they unfold, about half grown when the flowers open at the end of May and then membranaceous, yellow-green, smooth and scabrate above, and at maturity thin, yellow-green, smooth and glabrous on the upper surface and pale on the lower surface, 5.6–7 cm long and 4.5 cm wide, with slender yellow midribs, and thin primary veins arching obliquely to the points of the lobes; petioles slender, slightly wing-margined at the apex, glandular, with persistent glands, 2–2.5 cm long; stipules linear to linear-obovate, glandular, foliaceous and lunate on vigorous shoots, glandular, caducous. Flowers 1.5 cm in diameter, on slender elongated glabrous pedicels, in lax thin branched usually 7–10-flowered corymbs, with linear glandular bracts and bractlets fading brown; calyx-tube narrowly obconic,

glabrous, the lobes long, slender, acuminate, entire, glabrous, reflexed after anthesis; stamens 7–9; anthers light rose color; styles 2 or 3, surrounded at the base by a narrow ring of pale tomentum. Fruit ripening from the middle to the end of September, on slender drooping pedicels, in few-fruited clusters, short-oblong, full and rounded at the ends or slightly narrowed toward the base, orange-red, lustrous, marked by small pale dots, 1–1.3 cm long, and 8–9 mm wide; calyx little enlarged, with a deep narrow cavity, and slender closely appressed lobes, their tips often deciduous from the ripe fruit; flesh thick, pale yellow, sweet and juicy; nutlets 2 or 3, gradually narrowed and rounded at the ends, ridged on the back, with a low deeply grooved ridge, 7–8 mm long, and about 4 mm wide.

A shrub sometimes 4 m high, with small erect stems and branches, and slender slightly zigzag glabrous branchlets, dark orange-green deeply tinged with purple when they first appear, becoming dull reddish-brown and marked by small pale lenticels in their first season and light gray-brown the following year, and armed with slender straight purplish spines 2.5–3.5 cm long.

Buffalo, J. Dunbar (# 9, type), September 29, 1903, June 1, 1905, and May 28, 1905; (# 18), J Dunbar, May 28, 1905.

Crataegus colorata Sargent

Rochester Acad. Sci. Proc. IV. 123 (1903).

Buffalo, common, J. Dunbar, September 26, 1905, May 28, 1906; Niagara Falls, J. Dunbar, September 28, 1905; also near Rochester, New York.

Crataegus rubicunda Sargent

Rochester Acad. Sci. Proc. IV. 121 (1903).

Buffalo, J. Dunbar, May 21, 1903, May 28, 1906; also near Rochester, New York.

Crataegus ornata Sargent

Rochester Acad. Sci. Proc. IV. 120 (1903).

Buffalo, J. Dunbar (# 42), October 6, 1902, May 28, 1906; also near Rochester, New York.

Crataegus bella n. sp.

Leaves ovate, acuminate, rounded or abruptly cuneate at the broad entire base, finely doubly serrate above, with straight slender glandular teeth, and divided into 4 or 5 pairs of narrow acuminate spreading lateral lobes; dark red and covered on the upper surface with short white hairs when they first appear, nearly fully grown when the flowers open at the end of May and then membranaceous, light yellow-green and scabrate above and pale below, and at maturity thin but firm in texture, dark bluish green and very smooth on the upper surface, pale blue-green on the lower surface, 3.5–4.5 cm long and 3–3.5 cm wide, with slender midribs and thin primary veins; petioles slender, slightly wing-margined at the apex, glandular, with large dark glands occasionally persistent during the season, often rose color in the autumn, 1.5–2 cm in length; leaves on vigorous shoots rounded or slightly cordate at the base, and usually as broad as long, with stout broad-winged rose colored petioles. Flowers 1.6 cm in diameter, on slender glabrous pedicels, in crowded many-flowered corymbs, with linear bracts and bractlets fading brown; calyx-tube narrowly obconic, glabrous, the lobes slender, elongated, entire or sparingly dentate, glabrous, reflexed after anthesis; stamens, 10; anthers rose color; styles 3 or 4, surrounded at the base by a narrow ring of pale hairs. Fruit very showy, in wide many-fruited erect or spreading clusters, full and rounded at the ends or slightly narrowed from below the middle to the base, scarlet, lustrous, marked by many small pale dots, about 1 cm long and 8–9 mm wide; calyx prominent, with a broad deep cavity, and spreading or slightly incurved persistent lobes red on the upper side toward the base; flesh thick, yellow, sweet and juicy; nutlets 3 or 4, narrowed and acute at the ends, ridged on the back, with a broad doubly grooved ridge 7–8 mm long, and 4–5 mm wide.

A shrub 3–4 m high, with stout ascending tortuous stems, small spreading branches, and slender zigzag branchlets dark purple and puberulous when they first appear, soon glabrous, becoming bright chestnut-brown and lustrous in their first season and dull gray-brown the following year, and armed with stout straight or slightly curved bright chestnut-brown shining ultimately dull gray-brown spines 2.5–3.5 cm long.

Buffalo, J. Dunbar (№ 24, type), September 24, 1904, May 28, 1905.

Crataegus genialis Sargent

Rhodora V. 148 (1903).

Buffalo, J. Dunbar and C. S. Sargent (# 18), September 24, 1904, J. Dunbar, May 21, 1905; also eastern New York and western Massachusetts.

Crataegus tenuiloba Sargent

Rochester Acad. Sic. Proc. IV. 122 (1903).

Buffalo, J. Dunbar (# 19 and 30), September 30, 1904, May 28, 1905; also near Rochester, N. Y.

Crataegus streeterae Sargent

Rochester Acad. Sci. Proc. IV. 119 (1903).

Buffalo, J. Dunbar, May 28, 1906; Niagara Falls, September 27, 1905, May 28, 1906; also at Rochester, N. Y.

Crataegus conferta n. sp.

Leaves broadly ovate, acuminate or rounded and short pointed at the apex, rounded or slightly cordate at the entire base, finely serrate above, with straight glandular teeth, and slightly divided into 3 or 4 pairs of small acuminate spreading lobes; tinged with red and covered above with soft white hairs when they unfold, nearly fully grown when the flowers open at the end of May and then membranaceous, light yellow-green and scabrate above, and at maturity thin, grabrous, yellow-green and smooth on the upper surface, paler on the lower surface, 3–4 cm long and 3–3.5 cm wide, with comparatively stout midribs, and 4 or 5 pairs of thin primary veins; petioles slender, slightly wing-margined at the apex, glandular throughout the season, 1.5–1.8 cm in length; leaves on vigorous shoots somewhat thickened, cuneate at the base, more coarsely serrate, more deeply lobed, and often 5–6 cm long and 4–5 cm wide, with stout shorter broadly winged petioles. Flowers 1.8 cm in diameter, on short glabrous pedicels, in very compact crowded usually 7–8-flowered showy corymbs, with linear glandular bracts and bractlets; calyx-tube broadly obconic, the lobes slender, elongated, entire or sparingly dentate, glabrous, reflexed after anthesis; stamens 20; filaments persistent on the ripe fruit; anthers rose color; styles 3, surrounded at the base by a narrow ring of pale tomentum. Fruit ripening at the end of September, on short stout

reddish pedicels, in compact few-fruited erect clusters, short-oblong, slightly narrowed from the middle to the ends, orange-red, lustrous, marked by small pale dots, about 1.2 cm long and 8 mm wide; calyx little enlarged, with a deep narrow cavity, and small closely appressed persistent lobes bright red on the upper side; flesh thick, yellow, dry and sweet; nutlets 3, narrowed and acute at the ends or broader and rounded at the base, rounded and only slightly ridged on the back, about 7 mm long, and 4 mm wide.

A shrub 3–4 m high, with small ascending stems, and slender nearly straight branchlets dark orange-green more or less tinged with purple and puberulous when they first appear, soon glabrous, becoming bright chestnut-brown, lustrous, and marked by numerous small dark lenticles in their first season and dull reddish brown the following year, and armed with stout straight or slightly curved chestnut-brown shining spines 2–3 cm long.

Buffalo, J. Dunbar (✱ 10, type), May 28 and September 26, 1905; J. Dunbar (✱ 37), May 28, 1905.

Crataegus luminosa n. sp.

Leaves oblong-ovate, acuminate, rounded, truncate or rarely cuneate at the entire base, finely doubly serrate above, with straight glandular teeth, and slightly divided into 4 or 5 pairs of small acuminate lateral lobes; deeply tinged with red and covered on the upper surface with soft white hairs and glabrous below when they unfold, about half grown when the flowers open at the end of May and then yellow-green and scabrate above, and at maturity thin, glabrous, smooth and yellow-green on the upper surface, pale on the lower surface, 5–6 cm long and 3.5–4.5 cm wide, with slender yellow midribs and thin primary veins extending to the points of the lobes; petioles very slender, slightly wing-margined at the apex, glandular throughout the season, often tinged with rose color in the autumn, 2–3 cm in length; stipules linear, glandular, fading brown, caducous; leaves on vigorous shoots long-pointed, cordate at the base, more coarsely serrate and more deeply lobed. Flowers 1.8 cm in diameter, on long slender glabrous pedicels, in wide long-branched usually 8–10-flowered corymbs, the lowest peduncles from the axils of upper leaves; calyx-tube broadly obconic, glabrous, the lobes short, slender, sparingly dentate near the middle, glabrous on the outer, slightly villose on the inner surface, reflexed after anthesis; petals reflexed; stamens 20; anthers dark red; styles 5, surrounded at the base by a narrow ring of pale tomentum. Fruit

ripening early in September and soon falling, on stout red pedicels, in few-fruited drooping clusters, obovate, rounded at the apex, gradually narrowed from above the middle to the base, dark crimson, lustrous, marked by many small pale dots; calyx little enlarged, with a deep narrow cavity, the lobes usually deciduous from the ripe fruit; flesh thick, yellow, soft and juicy; nutlets 5, thin, rounded at the base, gradually narrowed and acute at the apex, slightly grooved on the back, about 7 mm long, and 4–5 mm wide.

A shrub sometimes 5 m high, with numerous ashy gray stems, small ascending and spreading branches, and slender slightly zigzag branchlets, dark orange-green deeply tinged with purple when they first appear, becoming in their first season light chestnut-brown, lustrous and marked by many small pale lenticels, and dull gray-brown the following year, and armed with stout slightly curved chestnut-brown or purplish spines 3–4 cm long.

Low wet woods, Buffalo, J. Dunbar (# 36, type), May 28 and September 26, 1905.

V MOLLES

Fruit subglobose to obovate, scarlet, pubescent at the ends; flesh thick and succulent; nutlets 3–5, narrowed at the ends, usually slightly ridged; corymbs hairy; leaves thin, broad, cuneate or rounded at the base; stamens 15–20; anthers rose color.

Crataegus radians n. sp.

Leaves oval to ovate, acuminate, concave-cuneate or rounded at the often unsymmetrical glandular base, sharply doubly serrate above, with straight glandular teeth, and divided often only above the middle into 6 or 7 pairs of slender acuminate spreading lobes; nearly half grown when the flowers open about the 20th of May and then thin, light yellow-green and roughened above by short white hairs and villose below, and at maturity thin, yellow-green and scabrate on the upper surface, paler and coated below on the slender midribs and primary veins with matted white hairs, 6–8.5 cm long and 4–5 cm wide; petioles slender, slightly wing-margined at the apex, villose, 2.5–3.5 cm in length; leaves on vigorous shoots rounded or truncate at the broad base, more coarsely serrate and more deeply lobed, often 9–10 cm long and 8–9 cm wide, with slender glandular petioles. Flowers 1.7–1.9 cm in diameter, on slender villose pedicels, in wide lax 5–16-flowered hairy corymbs, with linear-obovate to linear glandular bracts and

bractlets fading brown and mostly persistent until the flowers open; calyx-tube narrowly obconic, thickly coated with long white hairs, the lobes gradually narrowed from wide bases, slender, acuminate, entire or minutely and irregularly glandular serrate, glabrous on the outer, sparingly villose on the inner surface, reflexed after anthesis; stamens 15–20, usually 20; anthers dark rose color; styles 4 or 5, surrounded at the base by a narrow ring of long white hairs. Fruit ripening from the 20th to the end of September, on stout villose reddish pedicels, in few-fruited drooping clusters, short-oblong, full and rounded at the ends or obovate and slightly narrowed at the base, crimson, lustrous, puberulous at the ends, marked by large pale dots; calyx little enlarged, with a deep narrow cavity, and slender spreading recurved usually persistent lobes dark red on the upper side below the middle; flesh thin, juicy, dark yellow; nutlets 4 or 5, gradually narrowed and acute at the ends or rounded at the base, rounded and grooved or irregularly ridged on the back, 6–7 mm long, and 4–5 mm wide.

An arborescent shrub 7–8 m high, with stout spreading stems covered with light gray scaly bark, small spreading and ascending branches forming an open irregular head, and slender slightly zigzag branchlets, covered when they first appear with long matted white hairs, light red or orange-brown, pubescent and marked by pale lenticels in their first season, darker colored and glabrous the following year and ultimately ashy gray, and armed with slender nearly straight chestnut-brown shining spines 4.5–5 cm long.

Low moist woods, Rochester (Knickerbocker woods), Baxter and Dewing (# 302, type), October 10, 1904, May 21 and September 24, 1905, J. Dunbar, May 21, 1905.

VI FLABELLATAE

Fruit short-oblong to oval or obovate, scarlet, lustrous, 1.5–2 cm long; flesh succulent; nutlets 3–5, grooved and occasionally ridged on the back; leaves large, thin, ovate to oblong, more or less acutely lobed; anthers rose color or pink.

Stamens 20

Leaves broadly ovate, glabrous above at maturity; fruit obovate..... 1 C. dayana

Leaves oblong-ovate, scabrate above at maturity; fruit short-oblong..... 2 C. limosa

Stamens 10

Anthers pink; leaves ovate, glabrous above at maturity; fruit obovate..... 3 C. letchworthiana

Anthers rose color; leaves broadly ovate, scabrate above at maturity; fruit short-oblong.....4 C. pedicellata

Stamens 7–10

Flowers 2.4 cm in diameter, on slightly villose pedicels, in broad 10–15-flowered corymbs; anthers pale pink; fruit short-oblong, truncate at the apex, often unsymmetrical and mammillate at the base.....5 C. gloriosa

Flowers not more than 1.5 cm in diameter, on densely villose pedicels, in compact 8–10-flowered corymbs; anthers dark rose color; fruit subglobose to oval.....6 C. sejuncta

Stamens 5–7, usually 5

Leaves oval to ovate, light yellow-green; flowers cup-shaped, on glabrous or slightly villose pedicels; fruit oblong to oval.....7 C. holmesiana

Leaves oblong-ovate, dark yellow-green; flowers not cup-shaped; pedicels densely villose; fruit short-oblong.....8 C. acclivis

Crataegus dayana n. sp.

Leaves broadly ovate, acuminate, abruptly concave-cuneate or rounded at the entire or glandular base, sharply doubly serrate, with slender glandular teeth, and divided into 6 or 7 pairs of narrow acuminate spreading lateral lobes; when they unfold tinged with rose color and coated with soft white hairs more abundant on the lower than on the upper surface, nearly two thirds grown when the flowers open the last week of May and then very thin, yellow-green and scabrate above and pale and slightly hairy along the midribs and veins below, with short sometimes persistent hairs, and at maturity thin, dark yellow-green, smooth and glabrous on the upper surface, pale on the lower surface, 8–10 cm long and 7–9 cm wide, with stout midribs, and primary veins arching to the point of the lobes; petioles slender, wing-margined at the apex, slightly villose while young, becoming glabrous, rose colored in the autumn, 3–4 cm in length; stipules linear, only slightly glandular, fading brown, caducous; leaves on vigorous shoots thicker, cordate at the broad base, very coarsely serrate, more deeply lobed and often 10–11 cm long and wide, with stout glandular red petioles 2–2.5 cm in length, and foliaceous lunate glandular serrate deciduous stipules. Flowers 2–2.2 cm in diameter, on long stout slightly hairy pedicels, in wide lax long-branched usually 10–14 flowered corymbs, the lower peduncles from the axils of upper leaves; calyx-tube narrowly obconic, glabrous, the lobes gradually narrowed from broad bases, long, acuminate, coarsely glandular serrate above the middle, glabrous on the outer, slightly villose on the inner surface, reflexed after an-

thesis; stamens 20; anthers pink; styles 3 or 4, surrounded at the base by a narrow ring of pale tomentum. Fruit ripening from the first to the middle of September and soon falling, on long stout glabrous reddish drooping pedicels, in few-fruited clusters, obovate, full and rounded at the apex, gradually narrowed from above the middle to the base and sometimes decurrent on the pedicel, crimson, lustrous, marked by many small pale dots; calyx prominent, with a wide very deep cavity, and spreading and incurved coarsely serrate persistent lobes dark red on the upper side toward the base; flesh thick, dark yellow, juicy and edible; nutlets 3 or 4, acute at the ends, ridged on the back, with a narrow high ridge, 7–8 mm long, and about 5 mm wide.

A tree sometimes 5 m high, with a trunk occasionally 3 dm in diameter, covered with ashy gray bark, spreading horizontal branches forming a compact shapely head, and slender slightly zigzag glabrous branchlets dark orange-green deeply tinged with purple when they first appear, becoming bright chestnut-brown, very lustrous and marked by small pale lenticels in their first season and dull reddish brown the following year, and armed with slender nearly straight bright chestnut-brown shining spines 3.5–4.5 cm long; or an arborescent shrub, with numerous small stems.

Buffalo, J. Dunbar and C. S. Sargent (# 7, type), September 24, 1904, J. Dunbar, May 28, 1905.

This handsome tree is named in memory of David Fisher Day (June 11, 1829–August 21, 1901), the author with Judge Clinton, of *A Catalogue of the Native and Naturalized Plants of the City of Buffalo and its Vicinity* (1883), and of *A Catalogue of the Flowering and Fern-like Plants growing without Cultivation in the Vicinity of the Falls of Niagara* (1888).

Crataegus limosa n. sp.

Leaves oblong-ovate, acuminate, concave-cuneate or gradually narrowed and rounded at the entire base, coarsely doubly serrate above, with straight glandular teeth, and divided often only above the middle into 6 or 7 narrow acuminate lobes; more than half grown when the flowers open from the 15th to the 20th of May and then very thin, bright green and roughened above by short white hairs and pale bluish green and glabrous below, and at maturity thin, dark yellow-green and scabrate on the upper surface and pale yellow-green on the lower surface, 6–8 cm long and 4–5 cm wide, with stout orange colored midribs, and thin primary veins ex-

tending obliquely to the points of the lobes; petioles slender, narrowly wing-margined at the apex, slightly hairy on the upper side while young, soon glabrous, occasionally minutely glandular, 1.5–2.5 cm in length; leaves on vigorous shoots more deeply lobed and often 8–9 cm long and 6–6.5 cm wide. Flowers 1.8 cm in diameter, on long slender slightly hairy pedicels, in mostly 8–10-flowered compact thin-branched corymbs, the lower peduncles from the axils of upper leaves; calyx-tube narrowly obconic, glabrous, the lobes slender, elongated, minutely glandular-dentate, glabrous on the outer, pubescent on the inner surface, reflexed after anthesis; stamens 20–25; anthers red; styles 2–4, surrounded at the base by a narrow ring of pale tomentum. Fruit ripening the end of September, on stout nearly glabrous reddish pedicels, in few-fruited drooping clusters, short-oblong, full and rounded at the ends, crimson, lustrous, marked by large pale dots, 1–1.2 cm long and 8–10 mm wide; calyx little enlarged, with a deep narrow cavity, and spreading reflexed lobes red below the middle on the upper side and often deciduous from the ripe fruit; flesh thick, yellow, sweet and succulent; nutlets 2, narrowed and rounded at the ends or acute at the apex, ridged on the back, with a high often doubly grooved ridge, about 7 mm long, and 4 mm wide.

An arborescent shrub 5–7 m high, with widespreading stems often 2 dm in diameter and 1 m long covered with gray scaly bark, small drooping branches, forming a wide irregular open head, and slender zigzag glabrous branchlets dark orange-yellow and marked by pale lenticels when they first appear, becoming light chestnut-brown and lustrous in their first season and dull gray-brown the following year, and armed with few slender slightly curved chestnut-brown shining spines 3–4 cm long.

In the dense shade of thick woods, Hagaman's swamp near Rochester, J. Dunbar (*QQ), October 12, 1901, September 26, 1903, May 19 and September 26, 1902.

Crataegus letchworthiana n. sp.

Leaves ovate, acute or acuminate, concave-cuneate or rounded at the broad entire base, finely doubly serrate above, with straight glandular teeth, and slightly divided usually only above the middle into 3 or 4 pairs of small spreading acuminate lobes; slightly tinged with red when they unfold, nearly half grown when the flowers open at the end of May and then thin, yellow-green and covered above by soft white hairs and pale and slightly villose along the midribs and veins below, and at maturity thin but firm in texture,

yellow-green, smooth and glabrous on the upper surface, still slightly hairy along the slender yellow midribs and primary veins on the lower surface, 5–6 cm long and 4–5 cm wide; petioles slender, slightly wing-margined at the apex, hairy along the upper side when young, becoming nearly glabrous, glandular, with minute persistent glands, 1.5–2.5 cm in length; leaves on vigorous shoots rounded or slightly cordate at the base, long-pointed, more coarsely serrate, deeply divided into spreading or incurved lateral lobes, and 6–7 cm long and broad. Flowers 2 cm in diameter, on long slender slightly hairy pedicels, in broad rather compact mostly 10–15-flowered corymbs; calyx-tube narrowly obconic, glabrous, the lobes slender, acuminate, finely glandular serrate below the middle, glabrous on the outer, pubescent on the inner surface, reflexed after anthesis; stamens 10; anthers pink; styles 2–4. Fruit ripening early in September, on glabrous reddish pedicels, in drooping many-fruited clusters, obovate and rounded at the apex, gradually narrowed at the base, scarlet, lustrous, marked by many small pale dots, 1.2–1.3 cm long and 1–1.1 cm in diameter; calyx little enlarged, with a wide shallow cavity, and spreading often persistent lobes dark red on the upper side below the middle and slightly hairy above; flesh thick, yellow, sweet and juicy; nutlets 2–4, narrowed and rounded at the ends, or acute at the apex, prominently and irregularly ridged on the back, with a broad deeply grooved ridge or rounded and slightly grooved on the back, 7–8 mm long, and 5–6 mm wide.

A tree 8–10 m high, with a trunk often 3 dm in diameter, spreading and ascending branches forming a broad round-topped symmetrical head, and slender glabrous branchlets orange-green and slightly tinged with red when they first appear, becoming dull light chestnut-brown and marked by small pale lenticels in their first season and light gray-brown and rather lustrous the following year.

Meadows near Portage, Baxter and Dewing (№ 249), September 7, 1904 and May 29, 1905.

This beautiful tree is named for the distinguished philanthropist, William P. Letchworth of Buffalo, for a long time chairman of the State Board of Charities of New York, on whose farm at Portage I saw it in the autumn of 1904.

Crataegus pedicellata Sargent

Bot. Gazette, XXXI. 226 (1901); Silva N. Am. XIII, 101, t. 677; Rochester Acad. Sci. Proc. IV. 116; Man. 448, f. 365.

Buffalo, J. Dunbar, September 26, 1905, May 28, 1906; abundant through Monroe and Ontario counties, New York.

Crataegus gloriosa n. sp.

Leaves ovate, acuminate, gradually narrowed and rounded or abruptly concave-cuneate at the entire base, coarsely doubly serrate above, with straight glandular teeth, and slightly divided into 4 or 5 pairs of stout acuminate spreading lateral lobes; more than half grown when the flowers open from the 20th to the end of May and then yellow-green and roughened above by short white hairs and paler and slightly hairy along the midribs and primary veins below, and at maturity thin, slightly convex, dark green and scabrate on the upper surface, pale yellow-green and often still slightly hairy on the thin yellow midribs and primary veins below, 6–8 cm long and 5–7 cm wide; petioles slender, slightly wing-margined at the apex, sparingly villose on the upper side while young, often becoming glabrous, occasionally glandular, 3–4 cm in length; leaves on vigorous shoots thicker, rounded or abruptly cuneate at the base, more coarsely serrate and more deeply lobed, often 10–12 cm long and 9–10 cm wide, with prominent midribs and veins, and stout glandular petioles. Flowers 2.2–2.4 cm in diameter, on long slender slightly villose pedicels, in wide erect or spreading 10–15-flowered corymbs, with oblong-obovate to linear glandular rose colored bracts and bractlets often persistent until the flowers open; calyx-tube narrowly obconic, glabrous, tinged with red, the lobes abruptly narrowed from broad bases, large, acuminate, coarsely glanduiar serrate, glabrous on the outer, slightly villose on the inner surface, reflexed after anthesis; claws of the petals concave and forming conspicuous cavities; stamens 7–10; anthers light pink; styles 3–5, surrounded at the base by a wide ring of long white hairs. Fruit ripening the middle of September, on stout slightly hairy reddish pedicels, in few-fruited erect or spreading clusters, short-oblong, broad and truncate at the apex, sometimes slightly narrowed below and then often unsymmetrical at the base by the development of a mammillate process adnate to the pedicel, deep crimson, very lustrous, marked by large pale dots, 1.8–2.2 cm long and 1.5–1.8 cm in diameter; calyx prominent, with a broad deep cavity, and erect and incurved persistent lobes; flesh thick, yellow, sweet, very juicy, of excellent flavor; nutlets 3–5, acute at the apex, rounded and slightly ridged on the back, 6–7 mm long, and 3–4 mm wide

A tree often 8–9 m high, with a tall trunk covered with pale close bark, and sometimes 3 dm in diameter, spreading and ascending branches forming a broad symmetrical round-topped head, and

slender slightly zigzag glabrous branchlets dark orange color and marked by numerous pale lenticels when they first appear, becoming light reddish brown and lustrous in their first season and pale orange-brown the following year, and armed with few stout straight or slightly curved chestnut-brown shining spines 3–3.5 cm long.

Clay soil near the borders of woods, Rochester, J. Dunbar (✱ L, type), May 31, 1901, J. Dunbar and C. S. Sargent, September 27, 1901, September 19 1902; Rochester (Knickerbocker woods), Baxter and Dewing (✱ 304), May 21 and September 25, 1905.

Formerly referred to Crataegus pedicellata Sargent, the "L" tree of Rochester is distinct from that species in its larger flowers peculiar in the development of sacklike cavities at the base of the petals, by its pink not dark rose colored anthers, by the much larger and more lustrous fruit usually mammillate at the base and ripened 10 to 12 days earlier, and by its convex leaves. In habit, in its large and abundant flowers, and in the large and brilliant abundant fruits, C. gloriosa is not surpassed in beauty by any North American Crataegus.

Crataegus sejuncta Sargent

N. Y. State Mus. Bul. 105. 62 (1906).

Buffalo, J. Dunbar (✱ 34), May 28 and September 30, 1905; also near Albany, New York, and in western New England.

Crataegus holmesiana Ashe

Jour. Elisha Mitchell Sci. Soc. XVI. pt II. 78 (1899), Sargent, Bot. Gazette XXXI. 10; Silva N. Am. XIII. 119, t. 676; Rochester Acad. Sci. Proc. IV. 114; Man. 449, f. 366.

Buffalo, J. Dunbar (✱ 35), September 30, 1904, May 28, 1905; also near Rochester, New York and eastward to eastern Massachusetts and eastern Pennsylvania.

Crataegus acclivis Sargent

Rochester Acad. Sci. Proc. IV. 115 (1903); Man. 459, f. 367.

Niagara Falls, J. Dunbar, September 28, 1905, May 28, 1906; also near Rochester and Albany, New York.

VII DILATATAE

Fruit medium size, subglobose, scarlet; calyx much enlarged; nutlets 5, prominently ridged on the back; corymbs many-flowered; stamens 20; anthers rose color; leaves thin, on vigorous shoots as broad or broader than long.

Crataegus durobrivensis Sargent

Trees and Shrubs I. 3, t. 2 (1902); Rochester Acad. Sci. Proc. IV. 114 Sargent and Peck, N. Y. State Mus. Bul. 105. 64 (1906).

Niagara Falls, J. Dunbar, September 28, 1905; near Hemlock lake, Livingston co., Henry T. Brown, May and October 1906; also near Rochester and Albany, New York.

VIII COCCINEAE

Leaves cuneate at the base, subcoriaceous or thin dark green and lustrous above; fruit subglobose, 9–15 mm in diameter.

Stamens 5–10
  Anthers pale yellow
    Leaves subcoriaceous; fruit 1.2–1.5 cm in diameter.....
    .....1 C. coccinea
    Leaves thin; fruit usually less than 1 cm in diameter .....
    ..... 2 C. dodgei
  Anthers rose color
    Leaves thin; fruit 1–1.3 cm in diameter.....3 C. puberis
Stamens, 20; anthers pink; leaves thin; ovate to oval or rhombic.....
4 C. neo-baxteri

Crataegus coccinea Linneus

Spec. I. 476 (1753). Sargent, Bot. Gazette XXXI. 14; Silva N. Am. XIII. 133, t. 683; Man. 459, f. 375.

Buffalo, J. Dunbar (✱40), May 31, June 12 and September 26, 1905; also on the New England coast and in the valley of the St Lawrence river.

Crataegus coccinea var. rotundifolia Sargent

Bot. Gazette XXXI. 14 (1900); Silva N. Am. XIII. 134; Man. 460; Acad. Sci. Phila. Proc. IV. 631.

Buffalo, J. Dunbar (✱E), September 25, 1901; (✱33), September 30, 1904 and May 28, 1905; also common from Canada to eastern Pennsylvania.

Crataegus dodgei Ashe

Jour. Elisha Mitchell Sci. Soc. XIX. 26 (March 1903). Sargent, Acad. Sci. Phila. Proc. 632 (1905); Rhodora VII. 213 (Crataegus gravesii Sargent, Rhodora V. 159 (June 1903)). (Crataegus faliens Gruber, Bucks County Nat. Sci. Club. Proc. I. 19 (October 1903)).

Buffalo, J. Dunbar (✱B), September 25, 1901, May 26 and October 6, 1902, (✱12), September 29, 1903 and June 1, 1904; also from southern Michigan to eastern Massachusetts and eastern Pennsylvania.

Crataegus puberis n. sp.

Leaves rhombic to obovate, acuminate, gradually narrowed and concave-cuneate at the long entire base, finely doubly serrate above, with straight or incurved glandular teeth and slightly divided above the middle into 4 or 5 pairs of small acuminate lobes; more than half grown when the flowers open from the 20th to the 25th of May and then thin, dark yellow-green and covered above by soft white hairs and paler and villose below, and at maturity thin and firm in texture, dark green and glabrous on the upper surface, light yellow-green and nearly glabrous on the lower surface, 4.5–5.5 cm long and 3–4.5 cm wide, with slender slightly villose yellow midribs and veins; petioles slender, broadly wing-margined at the apex, hairy on the upper side, 1.5–3 cm in length. Flowers 1.2–1.3 cm in diameter, on slender densely villose pedicels, in compact 5–10-flowered corymbs, with linear glandular bracts and bractlets fading brown and often persistent until the flowers open; calyx-tube narrowly obconic, thickly coated with long matted pale hairs, the lobes slender, acuminate, obscurely glandular serrate, glabrous on the outer, sparingly villose on the inner surface, reflexed after anthesis; stamens 5–7; anthers dark rose color; styles 3 or 4, surrounded at the base by a narrow ring of pale tomentum. Fruit ripening about the middle of October, on slender slightly villose erect pedicels, in few-fruited clusters, short-oblong, full and rounded at the apex, slightly narrowed below, orange-red, lustrous, marked by pale dots, 1–1.3 cm long and 9–10 mm in diameter; calyx little enlarged, with a wide shallow cavity, and spreading and erect or recurved lobes dark red on the upper side below the middle; nutlets 3 or 4, rounded at the ends, rounded and only slightly grooved on the back, 6–7 mm long, and 4–5 mm wide.

A shrub sometimes 6–7 m high, with numerous stout gnarled stems covered with scaly bark, spreading and ascending branches, and slender nearly straight branchlets dark green and coated with matted white hairs when they first appear, becoming light orange color and glabrous during their first season and dull gray-brown the following year, and armed with occasional very slender nearly straight orange colored ultimately gray-brown spines 1–1.5 cm in length.

Borders of swamps and river bottoms in rich alluvial soil, near Belfast, Allegany co., Baxter and Dewing (№ 220, type), May 24, September 17 and October 17, 1903.

Crataegus neo-baxteri n. sp.

Leaves ovate to oval or rhombic, acuminate, cuneate and often unsymmetrical at the entire base, finely serrate above, with straight or incurved glandular teeth, and slightly divided above the middle into 4 or 5 pairs of small acuminate lateral lobes; nearly fully grown when the flowers open at the end of May and then thin, yellow-green, smooth and glabrous with the exception of a few hairs along the upper side of the midribs, and at maturity thin but firm in texture, yellow-green, glabrous, 4–4.5 cm long and 2–3.5 cm wide, with slender orange colored midribs and primary veins; petioles very slender, slightly wing-margined and sometimes minutely glandular at the apex, sparingly hairy along the upper side while young, becoming nearly glabrous, 2–2.5 cm in length. Flowers 1.8–2 cm in diameter, on very long slender glabrous pedicels, in wide lax 7–10-flowered corymbs, with linear glandular caducous bracts and bractlets, fading brown; calyx-tube narrowly obconic, glabrous, the lobes slender, acuminate, entire or occasionally obscurely dentate, glabrous, reflexed after anthesis; stamens 20, filaments persistent on the ripe fruit; anthers pink; styles 2 or 3, surrounded at the base by a narrow ring of pale hairs. Fruit ripening the end of September, on long very slender spreading reddish pedicels, in few-fruited clusters, short-oblong, full and rounded at the ends, rich deep red marked by large pale dots and covered by a thick glaucous bloom, 1–1.3 cm long and nearly as broad; calyx little enlarged, with a wide deep cavity, and spreading and recurved lobes often deciduous from the ripe fruit; flesh thin, yellow, dry and mealy; nutlets 3 or 4, gradually narrowed and rounded at the ends, slightly ridged on the back, 6–7 mm long, and about 4 mm wide.

A shrub 6–7 m high, with thin stems, spreading branches forming a broad symmetrical head, and slender glabrous branchlets light orange color when they first appear, becoming light chestnut-brown and lustrous in their first season and light gray-brown the following year, and armed with slender nearly straight red-brown spines 2–3 cm long.

Clay banks near Tuscarora, Livingston co., Baxter and Dewing (✱251, type), May 30 and September 23, 1905.

With this species, described by its discoverers as being "as ornamental a species as we know in the genus," I am glad to associate the name of Mr M. S. Baxter, as the species which I named for him in the Proceedings of the Rochester Academy of Science, volume 4, page 107 was afterward found to have been described a few months

earlier by Ashe under another name from plants growing in Pennsylvania.

IX ANOMALAE

Fruit medium size, short-oblong, orange-scarlet; nutlets occasionally furnished with obscure ventral depressions; leaves usually cuneate at the base, thickish to subcoriaceous, scabrate above while young; petioles slender, elongated; flowers in many-flowered corymbs; anthers rose color or pink.

Stamens 20; leaves ovate to oval, divided above the middle into short broad lobes; fruit short-oblong.....1 C. brachyloba
Stamens 10
Leaves ovate to oval or suborbicular, often rounded at the base, nearly smooth at maturity; fruit subglobose.....2 C. dunbari
Leaves oval, scabrate above at maturity; fruit short-oblong.....3 C. asperifolia
Stamens 5–15; leaves oval to obovate, scabrate above at maturity; fruit subglobose.....4 C. scabrida

Crataegus brachyloba n. sp.

Leaves ovate to oval, acuminate, concave-cuneate at the entire base, finely doubly serrate above, with straight or incurved glandular teeth, and divided usually only above the middle into 5 or 6 pairs of very short acuminate spreading lobes; slightly tinged with red when they unfold, roughened above by short white hairs and glabrous below, more than half grown when the flowers open during the last week of May and then membranaceous, yellow-green and scabrate on the upper surface and pale on the lower surface, and at maturity thick to subcoriaceous, dark blue-green, smooth and glabrous above, pale below, 5–7 cm long and 3.5–5 cm wide, with slender yellow midribs, and 5 or 6 pairs of thin primary veins; petioles slender, slightly wing-margined at the apex, glabrous, glandular often through the season, with minute scattered glands, and 2–3 cm in length; stipules linear, acuminate, glandular, fading brown, caducous; leaves on vigorous shoots subcoriaceous, long-pointed and acuminate at the apex, gradually narrowed and rounded at the base, coarsely serrate, with thick midribs and stout broadly winged conspicuously glandular rose colored petioles. Flowers 1.5 cm in diameter, on slender glabrous pedicels, in wide mostly 8–12-flowered corymbs, their lower peduncles from the axils of upper leaves; calyx-tube narrowly obconic, glabrous, the lobes gradually narrowed from wide bases, entire, red and glandular at the acuminate apex, reflexed after anthesis; stamens 20, filaments often

persistent on the ripe fruit; anthers pink; styles 3–5, surrounded at the base by a narrow ring of pale tomentum. Fruit ripening at the end of September, on slender reddish pedicels, in few-fruited erect clusters, short-oblong to obovate, orange-red, lustrous, marked by large pale lenticels, about 1 cm long and 8–10 mm wide; calyx little enlarged, with a narrow deep cavity, and closely appressed lobes dark red on the upper side below the middle; flesh thin, yellow-green, dry and mealy; nutlets usually 4, narrowed and acute at the ends or rounded at the base, rounded or ridged on the back, with a low broad ridge, light colored, 7–8 mm long, and about 4 mm wide.

A shrub 4–5 m high, with crowded slender fastigiate light gray branches, the lower spreading, the upper ascending, and stout only slightly zigzag glabrous branchlets light orange-green when they first appear, becoming dull olive-brown and marked by small dark lenticels in their first season and dull gray-brown the following year, and armed with few stout nearly straight dull dark chestnut-brown spines 2.5–3 cm in length.

Buffalo, J. Dunbar (№ 41, type), May 28, June 12 and September 26, 1905.

Crataegus dunbari Sargent

Rochester Acad. Sci. Proc. IV. 126 (1903).

Buffalo, J. Dunbar (№ 43), September 26, 1905, May 28, 1906; also near Rochester, New York.

Crataegus asperifolia Sargent

Rhodora III. 31 (1901). Sargent and Peck, N. Y. State Mus. Bul. 105. 64 (1906).

Buffalo, J. Dunbar (№ 13), September 29, 1903, June 1 and September 20, 1904; (№ 46), May 28, 1906; (№ 43), September 26, 1905, May 28, 1906; also near Albany, New York and in western New England.

Crataegus scabrida Sargent

Rhodora III. 29 (1901); Silva N. Am. XIII. 133, t. 677.

Belfast, Allegany co., Baxter and Dewing (№ 210), May 29 and September 17, 1903, September 13, 1904, May 29 and September 19, 1905; also in western New England.

2 NUTLETS WITH LONGITUDINAL CAVITIES ON THE VENTRAL FACES

X TOMENTOSAE

Fruit pyriform to subglobose or short-oblong, 1–1.5 cm in diameter, lustrous, orange or scarlet; nutlets 2 or 3, usually obtuse at the ends and prominently ridged on the back.

Leaves thin, with midribs and veins only slightly impressed on their upper surface; fruit obovate to short-oblong.

Stamens 20
- Anthers yellow.....1 C. structilis
- Anthers pink.....2 C. finitima

Stamens 10; anthers yellow .....3 C. venustula

Leaves thick to subcoriaceous or coriaceous on vigorous shoots, with midribs and veins deeply impressed on their upper surface; fruit subglobose to short-oblong or ovate, scarlet.

Stamens 20
- Anthers pink; leaves nearly glabrous at maturity; pedicels slender
  - Leaves ovate to obovate; flowers 1–1.2 cm in diameter, on slightly villose pedicels.....4 C. succulenta
  - Leaves oblong-ovate to oval, 1.6–1.8 cm in diameter, on densely villose pedicels.....5 C. admiranda
- Anthers rose color; leaves rhombic to oval or ovate, pubescent below at maturity; flowers on stout densely villose pedicels..... .....6 C. calvini

Stamens 10; anthers yellow
- Leaves rhombic to oval or obovate; flowers on short pedicels, in compact corymbs; calyx-lobes densely villose on the inner surface; fruit at least 1.2 cm in diameter, in drooping clusters; spines stout, nearly straight .....7 C. ferentaria
- Leaves broadly obovate to elliptic; flowers on long slender pedicels, in wide corymbs; calyx-lobes only slightly villose on the inner surface; fruit only 7–8 mm in diameter, in erect clusters; spines long, slender, usually curved.....8 C. macracantha

Crataegus structilis Ashe

Jour. Elisha Mitchell Sci. Soc. XIX. 12 (1903). Gruber, Bucks County (Penn.) Nat. Sci. Club Proc. I. 3. Sargent, Acad. Sci. Phila. Proc. 656 (1905).

Seneca park, Rochester, B. H. Slavin, 1906; also in eastern Pennsylvania and in Ontario and southern Michigan.

Crataegus finitima n. sp.

Leaves rhombic to oblong-ovate, acuminate and long-pointed at the apex, gradually narrowed and concave-cuneate at the acuminate entire base, sharply doubly serrate above, with straight glandular teeth, and divided above the middle into 4 or 5 pairs of small acuminate lobes; nearly fully grown when the flowers open about the 20th of May and then membranaceous, bright yellow-green, scabrous and sparingly villose along the midribs above and pale and slightly villose below, and at maturity thin but firm in texture, light green, smooth, lustrous and glabrous on the upper surface, and pale blue-green and villose-pubescent on the lower surface especially on the slender yellow midribs and thin pale primary veins extending very obliquely to the points of the lobes, 7.5–9 cm long and 4.5–5 cm wide; petioles slender, broadly wing-margined at the apex, villose on the upper side while young, soon glabrous, occasionally glandular early in the season, with minute glands, often rose color in the autumn, 2–3 cm in length; stipules linear, only slightly glandular, fading rose color, caducous; leaves on vigorous shoots sometimes obovate and rounded at the apex, more coarsely serrate and 8–9 cm long and 6–7 cm wide. Flowers 1.6 cm in diameter, on slender pedicels thickly covered with matted pale hairs, in wide villose 20–30-flowered corymbs, the lower peduncles from the axils of upper leaves, their bracts and bractlets linear, glandular, fading brown, caducous; calyx-tube narrowly obconic, covered with long white hairs, the lobes long, slender, acuminate, minutely glandular serrate below the middle, slightly villose on both surfaces, reflexed after anthesis; stamens 20; anthers pink; styles 2 or 3, surrounded at the base by a narrow ring of pale tomentum. Fruit ripening about the first of October, on short erect reddish pedicels in many-fruited clusters, short-oblong to subglobose, full and rounded at the ends, orange-red, lustrous, marked by large pale dots, about 1 cm in diameter; calyx prominent, with a narrow shallow cavity, and elongated spreading narrow coarsely serrate lobes red toward the base and puberulous on the upper surface; flesh thick, yellow, sweet and succulent; nutlets 2 or 3, broad, rounded at the ends, ridged on the back, with a low narrow ridge, penetrated on the inner face by broad deep cavities, about 6 mm long, and 4 mm wide

A tree or arborescent shrub 6–7 m high, sometimes with a trunk 2–2.5 dm in diameter and 2 m long covered with dark bark divided into narrow ridges, large spreading branches, and stout slightly

zigzag glabrous branches light orange-green when they first appear, becoming bright chestnut-brown, very lustrous and marked by oblong pale lenticels in their first season and dull red-brown the following year, and armed with many stout slightly curved chestnut-brown or purplish shining spines 6–8 cm long and often pointing toward the base of the branch, persistent and branched on old stems.

Niagara Falls, C. S. Sargent (✱ 6, type), September 19, 1901, J. Dunbar, May 22, 1903, September 29, 1904, May 28, 1906.

Crataegus venustula n. sp.

Leaves oblong-ovate, acuminate, sharply or abruptly concave-cuneate at the entire base, coarsely doubly serrate above, with straight glandular teeth, and divided into 5 or 6 pairs of small acuminate spreading lateral lobes; nearly fully grown when the flowers open during the last week of May and then membranaceous, dark yellow-green and roughened above by short white hairs, and pale and slightly villose along the midribs below, and at maturity thin but firm in texture, dark green, smooth and lustrous on the upper surface, pale yellow-green on the lower surface, 5–7 cm long and 3.5–4.5 cm wide, with slender dark yellow midribs, and thin primary veins arching obliquely to the points of the lobes; petioles slender, wing-margined at the apex, sparingly glandular while young, villose on the upper side early in the season, soon glabrous, 2–2.5 cm in length; leaves on vigorous shoots broadly ovate to oval, mostly rounded at the base and often 8–9 cm long and 7–8 cm wide, with stout broadly winged glandular petioles. Flowers on slender glabrous pedicels, in wide usually 15–20-flowered thin-branched corymbs; calyx-tube narrowly obconic, glabrous, the lobes long, slender, acuminate, coarsely glandular serrate, glabrous on the outer, villose on the inner surface, reflexed after anthesis; stamens 10; anthers pale yellow; styles 2 or 3, surrounded at the base by a narrow ring of white tomentum. Fruit ripening early in October, on stout erect red pedicels, in drooping many-fruited clusters, subglobose, often slightly broader than high, crimson, lustrous, marked by large pale dots, about 1 cm in diameter; calyx prominent, with a broad deep cavity, and long closely appressed coarsely serrate persistent lobes villose on the upper side and red toward the base; flesh thick, yellow, sweet and succulent; nutlets 2 or 3, broad and rounded at the ends, rounded and ridged on the back, with a broad low grooved ridge, penetrated on the inner faces by deep cavities, 6–7 mm long, and about 4 mm wide.

A shrub 3–4 m high, with slender erect stems covered with dark scaly bark, small erect branches, and thin nearly straight branchlets light olive-green and lustrous in their first season and dull gray-brown the following year, and armed with stout straight or slightly curved light chestnut-brown shining spines 3–3.5 cm in length.

Niagara Falls, J. Dunbar (✱14, type), June 1, 1904, May 28, 1906, J. Dunbar and C. S. Sargent, September 16, 1904.

Crataegus succulenta Link

Handbook II. 76 (1831). Sargent, Silva N. Am. XIII. 139, t. 131; Rochester Acad. Sci. Proc. IV. 133; Man. 497, f. 411; Acad. Sci. Phila. Proc. 675 (1905). Sargent & Peck, N. Y. State Mus. Bul. 105. 72 (1906).

Buffalo, J. Dunbar (✱21), September 29, 1903, September 20, 1904, June 12, 1905; Niagara Falls, J. Dunbar (✱29), June 12 and September 27, 1905, J. Dunbar (✱7), May 22 and September 29, 1903; also eastern New York to southern New England and Michigan.

Crataegus admiranda n. sp.

Leaves oblong-obovate to oval, acute or acuminate at the apex, concave-cuneate and gradually narrowed to the long entire base, finely doubly serrate above, with straight glandular teeth, and very slightly divided above the middle into 4 or 5 pairs of small acuminate spreading lobes; nearly half grown when the flowers open during the first week of June and then thin, yellow-green, lustrous and roughened above by short white hairs and pale and villose below especially along the midribs and veins, and at maturity dark yellow-green, lustrous, smooth and glabrous on the upper surface, pale and almost glabrous on the lower surface, 6–8 cm long and 4–5 cm wide, with stout midribs often rose color in the autumn, and slender primary veins extending obliquely to the points of the lobes; petioles slender, slightly wing-margined sometimes to the middle, villose on the upper side while young, becoming almost glabrous, usually rose color in the autumn, 1.5–1.8 cm in length; leaves on vigorous shoots subcoriaceous, broadly ovate to oval, gradually narrowed and rounded at the base, more coarsely serrate, often 7–8 cm long and 6–7 cm wide. Flowers 1.6–1.8 cm in diameter, on long slender pedicels coated with matted pale hairs, in wide usually 18–20-flowered hairy corymbs, the lower peduncles from the axils of upper leaves; calyx-tube narrowly obconic, densely villose, the lobes slender, acuminate, coarsely glandular serrate, villose on the outer, slightly villose on the inner surface, reflexed after anthesis; stamens

20; anthers pale pink; styles 2 or 3. Fruit ripening early in October, on stout villose erect or spreading reddish pedicels, in few-fruited clusters, subglobose to short-oblong or ovate, bright cherry-red, lustrous, marked by pale dots, 1.2–1.4 cm in diameter; calyx little enlarged, with a deep narrow cavity, and spreading and appressed lobes often deciduous from the ripe fruit; flesh yellow, soft and succulent; nutlets 2 or 3, gradually narrowed and rounded at the ends, ridged on the back, with a broad slightly grooved ridge, penetrated on the inner surface by large shallow cavities, 7–8 mm long, and 5–6 mm wide.

An arborescent shrub 3–4 m high, with stems covered with dark gray bar, spreading branches forming a round-topped open head, and stout nearly straight branchlets, light orange-green, slightly hairy and marked by large lenticels when they first appear, becoming light red-brown and lustrous in their first season, and dull dark reddish brown the following year and armed with stout nearly straight chestnut-brown or purplish shining spines 5–6 cm long, becoming branched and very abundant on old stems.

Niagara Falls, J. Dunbar (*2), October 7, 1902, June 7 and September 18, 1906.

Crataegus calvini n. sp.

Leaves rhombic to oval or ovate, acuminate or acute at the apex, gradually narrowed and concave-cuneate or rounded at the entire base, coarsely doubly serrate above, with straight glandular teeth, and very slightly divided above the middle into 4 or 5 pairs of small acuminate lobes; more than half grown when the flowers open about the first of June and then thin, yellow-green and slightly roughened above by short white hairs and pale and pubescent below, and at maturity subcoriaceous, dark green, smooth, glabrous and lustrous on the upper surface, paler and pubescent on the lower surface principally on the stout rose colored midribs and slender primary veins extending obliquely to the points of the lobes, 5–7 cm long and 4–5 cm wide; petioles stout, narrowly wing-margined sometimes to the middle, villose-pubescent on the upper side while young, becoming glabrous, rose colored in the autumn, 1–1.5 cm in length; leaves on vigorous shoots broadly ovate to oval or rarely obovate, short-pointed and acute at the apex, more coarsely serrate, often 9–10 cm long and 7–8 cm wide. Flowers 1.2–1.5 cm in diameter, on short stout densely villose pubescent pedicels, in broad many-flowered thick-branched hairy corymbs, with foliaceous

oblong-obovate acuminate glandular serrate bracts and bractlets fading brown and persistent until the flowers open, the long lower peduncles from the axils of upper leaves; calyx-tube narrowly obconic, thickly coated with matted pale hairs, the lobes abruptly narrowed from broad bases, wide, acuminate, laciniately glandular serrate, sparingly hairy toward the base on the outer surface, slightly villose on the inner surface, reflexed after anthesis; stamens 20; filaments often persistent on the ripe fruit; anthers light rose color; styles 2, surrounded at the base by a broad ring of tomentum. Fruit ripening late in September, on slender reddish hairy pedicels, in wide lax many-fruited drooping clusters, oval to ovate, full and rounded at the ends, scarlet, lustrous, marked by large pale dots; calyx prominent, with a wide deep cavity, and closely appressed persistent lobes dark red above at the base and villose on the upper surface; flesh thin, yellow, sweet and succulent; nutlets 2, full and rounded at the base, narrow and rounded at the apex, slightly ridged on the back, with a narrow grooved ridge, deeply penetrated on the inner face by long wide cavities, about 7 mm long, and 4 mm wide.

A shrub 2.5–3 m high, with numerous stems covered with dark gray bark, spreading branches, stout zigzag glabrous branchlets light yellow-green when they first appear, becoming bright chestnut-brown, very lustrous and marked by large pale lenticels in their first season and dull red-brown the following year, and armed with nearly straight stout or slender purplish shining spines 3–4 cm long.

Rich alluvial soil, near Canandaigua, Ontario co., C. C. Laney (✱ A. type), October 14, 1901, C. S. Sargent, October 1, 1902, M. S. Baxter, May 30 and September 20, 1903.

This handsome species is named for Mr Calvin Cook Laney, superintendent of the parks of the city of Rochester, New York, a keen and enthusiastic student of Crataegus, by whom it was first noticed in 1901.

Crataegus ferentaria Sargent

Rochester Acad. Sci. Proc. IV. 135 (1903); Rhodora VII. 184.

Buffalo, J. Dunbar (✱ 15), June 1, 1904, May 28 and June 12, 1905; also near Rochester and Utica, New York and eastward to New England,

Crataegus macracantha Koehne

Deutsche Dendr. 236 (1893). Sargent, Silva N. Am. XIII. 147, t. 689; Rochester Acad. Sci. Proc. IV. 135; Man. 501, f. 415.

Crataegus glandulosa macracantha Lindley, Bot. Reg. XXII. t. 1912 (1836).

Crataegus coccinea var. macracantha Dudley, Cornell Univ. Bul. II. 33 (1886).

Niagara Falls, J. Dunbar (*28), June 12 and September 28, 1905; also near Rochester, New York and eastward to New England.

NOTES ON A COLLECTION OF CRATAEGUS MADE BY MR G. D. CORNELL IN THE NEIGHBORHOOD OF COOPERS PLAINS, STEUBEN COUNTY, NEW YORK.

BY C. S. SARGENT

PUNCTATAE

Crataegus desueta n. sp.

Leaves rhombic to slightly obovate, acuminate at the ends, finely doubly serrate, with straight glandular teeth, and divided above the middle into 5 or 6 pairs of slender acuminate spreading or recurved lobes; when they unfold tinged with red and covered on the upper surface with long soft white hairs, more than half grown when the flowers open about the middle of May and then very thin, light yellow-green and nearly glabrous above and pale and glabrous below, and at maturity thin but firm in texture, dark yellow-green, smooth, glabrous and lustrous on the upper surface, pale yellow-green on the lower surface, 5–6 cm long and 3–4 cm wide, with slender prominent yellow midribs and primary veins; petioles slender, slightly wing-margined at the apex, sparingly hairy on the upper surface, 1.5–2.5 cm in length; leaves on vigorous shoots oval to obovate, usually abruptly long-pointed at the apex, concave-cuneate at the base, more coarsely serrate, more deeply lobed and often 6–7 cm long and 4.5–5 cm wide. Flowers about 1.5 cm in diameter, on slender slightly villose pedicels, in lax mostly 8–10-flowered corymbs, the much elongated lower peduncles from the axils of upper leaves; calyx-tube narrowly obconic, glabrous, the lobes long, slender, acuminate, entire or occasionally glandular dentate near the base, glabrous, reflexed after anthesis; stamens 10; anthers rose color; styles 2–4, surrounded at the base by a narrow ring of pale tomentum. Fruit ripening late in September, on long slender glabrous or slightly hairy drooping pedicels, in few-fruited clusters, short-oblong full and rounded at the ends, scarlet, lustrous, marked by small pale dots, 1–1.2 cm long, 8–10 mm in diameter; calyx prominent, with a deep narrow cavity, and much elongated erect and incurved nearly entire persistent lobes dark red on the upper side below the middle; flesh thin, dark yellow, dry and mealy; nutlets usually 3 or 4, narrowed and acute at the ends or rounded at the apex, rounded and only slightly grooved on the back, 6.5–7 mm long, and 4–4.5 mm wide.

A shrub not more than 4 m high, with numerous small erect or slightly spreading stems covered with dark gray bark, small ascending branches and slender nearly straight glabrous branchlets, dark orange-green and marked by pale lenticels when they first appear, becoming bright chestnut-brown in their first season and dull gray-brown the following year, and armed with slender nearly straight chestnut-brown shining spines 4.5–5.5 cm long, and often persistent and becoming stout and dark gray on old stems.

Rich moist hillsides, Coopers Plains, G. D. Cornell (№ 23, type), September 21, 1905, May 27 and September 24, 1906, (№ 23A), September 23, 1905, May 17, 1906, (№ 9), September 17, 1905, May 28, 1906.

PRUINOSAE

Stamens 20

Anthers rose color or pink

Crataegus beata Sargent

Rochester Acad. Sci. Proc. IV. 97 (1903).

Hillsides, Coopers Plains, G. D. Cornell (№ 102), September 1906, June 1907; also valley of the Genesee river, New York.

Crataegus arcana Beadle

Bilt. Bot. Studies I. 122 (1902). Sargent, Bot. Gazette XXXV. 101; Acad. Sci. Phila. Proc. 588 (1905).

Rich hillsides, Coopers Plains, G. D. Cornell (№ 28), September 30, 1906, May 25 and October 28, 1907; also Niagara Falls, New York and eastern Pennsylvania to western North Carolina.

Crataegus pellecta n. sp.

Glabrous with the exception of the hairs on the upper side of the young leaves and petioles. Leaves ovate, acuminate, rounded or abruptly cuneate at the entire base, finely doubly serrate above, with straight glandular teeth, and slightly divided above the middle into 3 or 4 pairs of small spreading acuminate lobes; about half grown when the flowers open at the end of May or early in June and then thin, light yellow-green above and slightly hairy along the upper side of the midribs and paler below, and at maturity thin, dull bluish green, 5–6 cm long and 3.5–4.5 cm wide, with thin prominent midribs and primary veins; petioles slender, slightly wing-margined at the apex, sparingly villose on the upper side while

young, 2.5–3 cm in length; leaves on vigorous shoots broadly ovate, usually rounded at the base, more deeply lobed, and often 5–6 cm long and wide. Flowers 2–2.4 cm in diameter, on long slender pedicels, in mostly 4–10-flowered lax corymbs, the lower peduncles from the axils of upper leaves; calyx-tube broadly obconic, the lobes gradually narrowed from broad bases, short, acuminate, entire or occasionally dentate near the middle, reflexed after anthesis; stamens 20; anthers faintly tinged with pink; styles 3–5. Fruit ripening at the end of October, on stout erect pedicels, in few-fruited clusters, short-oblong to subglobose or often rather broader than long, slightly angled toward the base, dark red, pruinose, 1.2–1.4 cm in diameter; calyx prominent, with a broad deep cavity tomentose in the bottom, and small spreading persistent lobes; flesh thin, tinged with red, dry and mealy; nutlets 3–5, acute at the ends or rounded at the apex, rounded and slightly grooved on the back, 6.5–7 mm long, and about 5 mm wide.

A shrub sometimes 3–4 m high, with numerous small stems, ascending branches, and slender nearly straight branchlets dark orange-green tinged with red when they first appear, becoming dark chestnut-brown, lustrous and marked by small dark lenticels in their first season and dull reddish brown the following year, and armed with stout slightly curved bright chestnut-brown shining spines 3–4 cm long.

Rich hillsides, Coopers Plains, G. D. Cornell (№ 86, type), October 20, 1906, June 8, 1907.

Crataegus amoena Sargent

Rich hillsides, Coopers Plains, G. D. Cornell (№97), October 28, 1906, June 5, 1907; (№ 38), October 1, 1905, June 2, 1907; (№89), October 28, 1906, June 8, 1907; also at Niagara Falls, New York.

Crataegus gracilis Sargent

Rich hillsides, Coopers Plains, G. D. Cornell (№40), May 26, 1906, June 1907.

Crataegus ramosa n. sp.

Glabrous with the exception of the hairs on the young leaves. Leaves oblong-ovate, acuminate, rounded or abruptly cuneate at the broad base, finely doubly serrate, and divided into 3 or 4 pairs of short broad acuminate lobes; when they unfold deeply tinged with red, villose above and furnished below with axillary tufts of

short hairs; more than half grown when the flowers open at the end of May or early in June and then thin, yellow-green, glabrous and paler below than above, and at maturity thin but firm in texture, dark yellow-green, smooth and lustrous on the upper surface, paler on the lower surface, 4.5–6 cm long and 3.5–5 cm wide, with thin midribs and primary veins; petioles slender, slightly wing-margined at the apex, conspicuously glandular while young, with usually deciduous glands, 2–2.5 cm long; leaves on vigorous shoots subcoriaceous, ovate, acuminate, rounded or slightly cordate at the base, coarsely serrate, deeply lobed, often 7–8 cm long and wide, with stout broad-winged coarsely glandular petioles, and linear falcate glandular caducous stipules. Flowers 2–2.8 cm in diameter, on long slender pedicels, in 5–8-flowered compact corymbs, with linear-obovate to linear bracts and bractlets fading brown and often persistent until the flowers open, the long lower peduncles from the axils of upper leaves; calyx-tube narrowly obconic, the lobes gradually narrowed from the base, long, slender, acuminate, red and glandular at the apex, entire or irregularly glandular dentate, reflexed after anthesis; stamens 20; anthers pink; styles 3–5, surrounded at the base by a narrow ring of pale tomentum. Fruit on long slender drooping red pedicels, in few-fruited clusters, ripening and falling at the end of October, short-oblong to oval, full and rounded at the ends, red, pruinose, becoming lustrous, marked by large dots, 1.2–1.3 cm long, 1–1.1 cm in diameter; calyx prominent, with a short tube, a wide deep cavity, broad and tomentose in the bottom, and small spreading persistent lobes; flesh green, dry and hard; nutlets 3–5, narrowed and acute at the ends or rounded at the base, ridged on the back, with a high narrow slightly grooved ridge, 7–7 5 mm long, and 4–4.5 mm wide.

A shrub 3 m high, with small intricately branched stems covered with light gray bark, small ascending branches forming a compact round-topped head, and stout straight or slightly zigzag branchlets deeply tinged with red when they first appear, becoming light chestnut-brown, lustrous and marked by numerous small dark lenticels in their first season and pale gray-brown the following year, and armed with slender straight light chestnut-brown shining spines 3.5–4 cm long.

Rich hillsides, Coopers Plains, G. D. Cornell (№ 98, type), October 21, 1906, June 5, 1907.

Anthers yellow

Crataegus cognata Sargent

Rhodora V. 58 (1903).

Hillsides, Coopers Plains, G. D. Cornell (№ 6, 43 and 103), September and October 1905, May 1906; also southern Ontario, through western New York to western and southern New England.

Crataegus rubro-lutea n. sp.

Glabrous with the exception of the hairs on the young leaves. Leaves ovate to oval, acuminate, rounded or cuneate at the entire base, finely doubly serrate above, with straight or incurved glandular teeth, and slightly divided above the middle into 3 or 4 small acuminate spreading lobes; bronze color and roughened above by short white hairs and furnished below with axillary tufts of hairs when they unfold, more than half grown when the flowers open late in May or early in June and then thin, yellow-green, nearly glabrous and paler below than above, and at maturity thin but firm in texture, dull yellow-green, smooth and glabrous on the upper surface, pale yellow-green on the lower surface, 4–5 cm long and 3.5–4 cm wide, with prominent yellow midribs, and primary veins still furnished with a few axillary hairs; petioles slender, slightly wing-margined at the apex, glandular with small dark often persistent glands, 1.5–2 cm in length; stipules linear, green, glandular-serrate, caducous; leaves on vigorous shoots subcoriaceous, ovate, rounded or subcordate at the broad base, often 4.5–5.5 cm long and wide and often broader than long. Flowers 1.8–2.2 cm in diameter, on long slender pedicels, in wide, lax, mostly 6–10-flowered corymbs, the elongated lower peduncles from the axils of upper leaves; calyx-tube narrowly obconic, the lobes gradually narrowed from the base, wide, short, acuminate and glandular at the apex, entire or minutely glandular dentate, reflexed after anthesis; stamens 20; anthers pale yellow; styles 4 or 5. Fruit on long slender red drooping pedicels, in few-fruited clusters, ripening and falling from the middle to the end of October, subglobose and often broader than high, or obovate and abruptly narrowed at the base, slightly angled, light orange-red, lustrous, marked by large dark dots, 1.2–1.5 cm in diameter; calyx prominent, with a short tube, a broad deep cavity tomentose in the bottom, and small spreading slightly incurved appressed lobes; flesh hard, mealy, light orange-red; nutlets 4 or 5, narrowed and acute at the ends, ridged on the back, with a high narrow often deeply grooved ridge, 6–6.5 mm long, and 4–4.5 mm wide.

A shrub 3–4 m high, with numerous small stems covered with dark gray bark, spreading and ascending branches forming an open head, and slender nearly straight branchlets, light green when they first appear, becoming light chestnut-brown, lustrous and marked by small dark lenticels in their first season and dull red-brown the following year, and armed with numerous stout or slender, straight or slightly curved chestnut-brown shining spines 1–1.5 cm long.

Hillsides, Coopers Plains, G. D. Cornell (№ 96, type), October 21, 1906, June 5, 1907.

Stamens 15–20; anthers pale rose color.

Crataegus macrocalyx n. sp.

Glabrous with the exception of the hairs on the young leaves. Leaves ovate, acuminate, rounded or cuneate at the base, finely and often doubly serrate above, with straight glandular teeth, and divided into 4 or 5 pairs of short broad acuminate spreading lobes; sometimes deeply 3-lobed on stump shoots; tinged with red and setose above when they unfold, nearly fully grown when the flowers open late in May and then very thin, yellow-green and nearly glabrous, and at maturity thin, yellow-green and scabrate on the upper surface, pale bluish green on the lower surface, 5–6 cm long and 4.5–5 cm wide, with thin rose colored midribs and primary veins; petioles slender, slightly wing-margined at the apex, glandular, with minute often persistent glands, 2–3 cm in length; stipules linear to linear-falcate, acuminate, glandular, fading brown, caducous. Flowers 1.8–2.5 cm in diameter, on long slender pedicels, in narrow mostly 5–7-flowered corymbs, the elongated lower peduncles from the axils of upper leaves; calyx-tube broadly obconic, the lobes separated by wide sinuses, gradually narrowed from the base, short, slender and glandular at the apex, entire or occasionally dentate, reflexed after anthesis; stamens 15–20; anthers pale rose color; styles 3 or 4, surrounded at the base by a narrow ring of pale hairs. Fruit ripening the end of October, on slender spreading red pedicels, in few-fruited clusters, short-oblong, full and rounded at the ends, slightly angled, red, pruinose, marked by small pale dots, 1–1.2 cm in diameter; calyx very prominent, with a broad deep cavity narrow and tomentose in the bottom, and spreading lobes dark red on the upper side below the middle; flesh green, dry and mealy; nutlets 3 or 4, acute at the ends, rounded and slightly grooved or irregularly ridged on the back, 6.5–7 mm long, and 4–4.5 mm wide.

A shrub 2–3 m high, with stems covered with dark gray b
ascending branches and slender slightly zigzag branchlets dark g
and marked by pale lenticels when they first appear, becó
bright chestnut-brown and lustrous in their first season and
reddish brown the following year, and armed with slender stra
dark chestnut-brown shining ultimately dull gray spines 1.5–2
long.

Rich hillsides, Coopers Plains, G. D. Cornell (*41, type),
28 and October 3, 1906.

Stamens 10 or less
Anthers rose color
Leaves smooth

Crataegus numerosa n. sp.

Glabrous with the exception of the hairs on the upper surfac
the young leaves. Leaves oblong-ovate, long-pointed and ac
nate at the apex, abruptly concave-cuneate or occasionally rou
at the entire base, coarsely often doubly serrate above, with stra
glandular teeth, and divided into 4 or 5 pairs of short broad ac
nate lateral lobes; bronze color when they unfold, about one
grown when the flowers open at the end of May and then
thin, dark yellow-green, smooth, lustrous and slightly hairy a
the midribs above and glaucous below, and at maturity thin,
yellow-green on the upper surface, very pale bluish green on
lower surface, 5–6 cm long and 4–5 cm wide, with slender ye
midribs, and thin primary veins arching obliquely to the point
the lobes; turning yellow in autumn before falling; petioles sle
slightly wing-margined at the apex, pubescent on the upper
while young, soon becoming glabrous, 2.5–3.5 cm in length. Flo
1.5–2 cm in diameter, on slender pedicels, in small mostly
flowered corymbs, the lower peduncles from the axils of u
leaves; calyx-tube narrowly obconic, the lobes separated by
sinuses, short, broad, glandular and red at the acuminate a
entire or minutely glandular dentate near the base, reflexed
anthesis; stamens 10; anthers rose color; styles 3–5, usually 3
surrounded at the base by a narrow ring of pale hairs.
ripening the middle of October, on long drooping pedicels, in
fruited clusters, obovate, rounded at the apex, abruptly narr
and often mammillate at the base, scarlet, pruinose, marke
large pale dots, about 1 cm long and 9–10 mm in diameter;
little enlarged, with a short tube, a broad deep cavity tomento

the bottom, and small spreading lobes red on the upper side; flesh yellow, thin and dry; nutlets 3 or 4, acute at the ends or slightly narrowed and rounded at the apex, ridged on the back, with a low grooved ridge, 5–5.6 mm long, and 4–4.5 mm wide.

A narrow shrub sometimes 4 m high, with stems covered with gray-green scaly bark, small ascending branches, and slender slightly zigzag branchlets deeply tinged with red when they first appear, becoming bright chestnut-brown, lustrous and marked by pale lenticels in their first season and dull reddish brown the following year, and armed with stout straight or slightly curved chestnut-brown shining spines 2–3.5 cm long, very numerous and becoming branched on old stems and branches.

Rich hillsides, Coopers Plains, common; G. D. Cornell (№32, type), September 21, 1905, May 26, 1907; (№87), October 21, 1906.

Crataegus uncta n. sp.

Glabrous with the exception of the hairs on the young leaves. Leaves ovate, acuminate, rounded at the entire base, finely doubly serrate above, with straight glandular teeth, and slightly divided above the middle into 2 or 3 pairs of small acuminate spreading lobes; when they unfold bronze color and slightly hairy on the upper surface and in the axils of the veins below, nearly fully grown when the flowers open at the end of May and then very thin, nearly glabrous, smooth and dark yellow-green above and pale below, and at maturity thin but firm in texture, dark yellow-green, 4–4.5 cm long and 3–3.5 cm wide, with thin midribs and primary veins; petioles slender, slightly wing-margined at the apex, pubescent on the upper side while young, soon becoming glabrous, occasionally glandular, 1.5–2 cm in length; leaves on vigorous shoots thicker, often truncate at the broad base, more coarsely serrate and more deeply lobed, 6–7 cm long and 5–6 cm wide. Flowers 1.5–2 cm in diameter, on long slender pedicels, in small mostly 4–8-flowered corymbs, the lower peduncles from the axils of upper leaves; calyx-tube narrowly obconic, the lobes short, broad, acuminate and glandular at the apex, coarsely glandular serrate, reflexed after anthesis; stamens 8–10; anthers slightly tinged with rose color; styles 4 or 5, surrounded at the base by a broad ring of white tomentum. Fruit ripening the end of September, on long slender drooping pedicels, in few-fruited clusters, broader than long, truncate at the wide apex, slightly narrowed to the base; red, lustrous, marked by large pale dots, 1.2–1.4 cm in diameter; calyx little enlarged, with a deep narrow cavity, and small spreading or incurved persistent

lobes; flesh thick, deeply tinged with red; nutlets 4 or 5, acute at the base, abruptly narrowed and rounded or acute at the apex, rounded and grooved or irregularly ridged on the back, about 7 mm long, and 3.5–4 mm wide.

A shrub 3–4 m high, with stems covered with dark gray-brown bark, ascending branches and stout nearly straight branchlets dark orange-green and marked by large pale lenticels when they first appear, becoming dark chestnut-brown and lustrous in their first season and dull gray-brown the following year, and armed with stout straight purplish shining spines 3.5–4 cm long.

Hillsides, Coopers Plains, G. D. Cornell (№ 61, type), May 26 and September 21, 1906.

Crataegus plana Sargent

Hillsides, Coopers Plains, G. D. Cornell (№ 2), September 30, 1905, May 25, 1906, (№ 36), October 1, 1905, May 26, 1906, (№ 101), September 21, 1906, June 5, 1907; also in the Genesee valley and near Buffalo, New York.

Crataegus dissona Sargent

Rhodora V. 60 (1903); Bot. Gazette XXXV. 379; Acad. Sci. Phila. Proc. 601 (1905).

Coopers Plains, G. D. Cornell (№ 4), October 8, 1905, May and October 1906 (№ 53), October 1, 1905, May 26, 1906; also Illinois to western and southern New England and to eastern Pennsylvania.

Leaves scabrate

Crataegus ovatifolia n. sp.

Leaves ovate, long-pointed and acuminate at the apex, gradually or abruptly narrowed and concave-cuneate at the entire base, finely often doubly serrate above, with straight glandular teeth, and slightly divided above the middle into 3 or 4 pairs of narrow acuminate spreading lobes; deeply tinged with red and covered by soft white hairs on the upper surface when they unfold, about half grown when the flowers open at the end of May and then very thin, yellow-green above and glabrous below, and at maturity thin, dark yellow-green, slightly hairy and scabrate on the upper surface, pale bluish green on the lower surface, 4–5 cm long and 3–3.5 cm wide, with thin midribs and primary veins; petioles very slender, slightly wing-margined at the apex, sparingly villose on the upper side while

young, soon becoming glabrous, glandular, with minute generally deciduous glands, 2–2.5 cm in length; leaves on vigorous shoots thicker, rounded or abruptly cuneate at the base, more coarsely serrate and more deeply lobed, often 6 cm long and 4–4.5 cm wide. Flowers 1.7–2 cm in diameter, on long slender glabrous pedicels, in compact mostly 5–10-flowered corymbs, the lower peduncles from the axils of the upper leaves; calyx-tube narrowly obconic, the lobes gradually narrowed from wide bases, long, slender, acuminate, entire or minutely glandular serrate, glabrous, reflexed after anthesis; stamens 10; anthers red; styles 3 or 4, surrounded at the base by a narrow ring of pale hairs. Fruit ripening late in October and often persistent during the winter, on slender drooping reddish pedicels, in few-fruited clusters, obovate, full and rounded at the apex, gradually narrowed at the base, scarlet, pruinose, marked by large dark dots, 1–1.2 cm long, 8–10 mm in diameter; calyx prominent, with a broad deep cavity wide and tomentose in the bottom, and spreading persistent lobes dark red on the upper side below the middle; flesh thin, greenish yellow, rather juicy; nutlets 3 or 4, acute at the ends, ridged on the back, with a broad low grooved ridge, 6–6.5 mm long, and 4–4.5 mm wide.

A shrub 3–4 m high, with numerous small stems covered with ashy gray bark and often spreading into large thickets, ascending branches, and slender nearly straight branchlets dark orange-green and marked by pale lenticels when they first appear, becoming bright chestnut-brown and lustrous in their first season and dull red-brown the following year, and armed with slender straight or slightly curved dark chestnut-brown shining spines 3–4.5 cm long, often persistent and becoming compound on old stems.

Coopers Plains, G. D. Cornell (✻ 1, type), September 21, 1905, May 27, 1906 (✻ 24), May 24 and September 21, 1905 (✻ 33), October 1906, May 1907.

Crataegus barryana Sargent

Hillsides, Coopers Plains, G. D. Cornell (✻ 27), September 21, 1905, May 25 and October 14, 1906, May and October 1907; also near Rochester, New York.

Crateagus acerba n. sp.

Leaves ovate to rhombic, acuminate at the apex, cuneate at the entire base, sharply often doubly serrate above, with straight or

incurved glandular teeth, and divided usually above the middle into 3 or 4 pairs of narrow acuminate spreading lobes; deeply tinged with red, strigose above and glabrous below when they unfold, about half grown when the flowers open late in May or early in June, and then thin, yellow-green and scabrate on the upper surface and paler on the lower surface, and at maturity thin but firm in texture, dark dull bluish green and still slightly roughened above and paler below, 4–5 cm long and 3.5–4 cm wide, with thin midribs and primary veins; petioles slender, slightly wing-margined at the apex, pubescent on the upper side while young, soon becoming glabrous, glandular with minute usually deciduous glands 2–2.5 cm in length; stipules linear to linear-obovate, glandular, green, caducous; leaves on vigorous shoots thicker, broadly ovate, rounded, truncate or cuneate at the base, coarsely serrate, more deeply lobed and often 6–7 cm long and broad, with stout conspicuously glandular petioles 2.5–3 cm in length. Flowers 1.6–1.9 cm in diameter, on long slender glabrous pedicels, in small mostly 5–9-flowered corymbs, the lower peduncles from the axils of upper leaves; calyx-tube narrowly obconic, glabrous, the lobes slender, glandular at the acuminate apex, minutely glandular serrate near the middle, glabrous, often bright red, reflexed after anthesis; stamens 5–7; anthers light rose color; styles 3 or 4, surrounded at the base by a narrow ring of pale tomentum. Fruit falling late in October without becoming soft, on stout drooping pedicels, in few-fruited clusters, full and rounded at the apex, abruptly narrowed at the base, crimson, pruinose, marked by small pale dots, 1–1.2 cm long and 9–10 mm in diameter; calyx little enlarged, without a tube, with a deep narrow cavity tomentose in the bottom, and small spreading and incurved lobes dark red on the upper side; flesh green, dry and hard; nutlets 3 or 4, acute at the ends, rounded and grooved or ridged, with a high narrow ridge on the back, 6–6.5 mm long, and 4–4.5 mm wide.

A dense shrub 3–4 m high, with stems covered with dark gray bark, ascending branches forming a narrow compact head, and stout slightly zigzag glabrous branchlets deeply tinged with red when they first appear, becoming light chestnut-brown, lustrous and marked by dark lenticels in their first season and dull gray-brown the following year, and armed with stout straight or slightly curved chestnut-brown shining spines 3–3.5 cm long.

Coopers Plains, G. D. Cornell (*84, type), October 7, 1906, June 3, 1907.

Crataegus dissociabilis n. sp.

Leaves broadly ovate to triangular, acuminate, rounded, truncate or abruptly cuneate at the wide entire base, finely often doubly serrate above, with small glandular teeth, and slightly divided usually only above the middle into 3 or 4 pairs of small acuminate lobes; when they unfold deeply tinged with red and covered on the upper surface with soft white hairs and slightly hairy in the axils of the veins below, nearly fully grown when the flowers open late in May or early in June, and then thin, light yellow-green, scabrate and slightly hairy on the midribs above, and at maturity thin, yellow-green, slightly roughened and lustrous on the upper surface, pale bluish green on the lower surface, 3.5–4 cm long and 3–4 cm wide, with thin midribs, and primary veins arching obliquely to the points of the lobes; petioles slender, slightly wing-margined at the apex, glandular while young, with mostly deciduous glands, 1.5–3 cm in length. Flowers 1.5–2 cm in diameter, on slender glabrous pedicels, in compact mostly 5–10-flowered corymbs, with linear-obovate to linear glandular bracts and bractlets fading brown and deciduous before the flowers open, the long lower peduncles from the axils of upper leaves; calyx-tube narrowly obconic, glabrous, the lobes gradually narrowed from the base, slender, glabrous, red and glandular at the acuminate apex, irregularly and coarsely glandular serrate usually only below the middle, reflexed after anthesis; stamens 5–10; anthers pale rose color; styles 3 or 4. Fruit ripening and falling late in September, on long slender drooping pedicels, in few-fruited clusters, obovate, full and rounded at the apex, abruptly narrowed at the base, light cherry-red, very pruinose, marked by large pale dots, about 1 cm long and 9 mm in diameter; calyx little enlarged, without a tube, with a wide deep cavity narrow in the bottom, and small spreading lobes dark red on the upper side; flesh pink, sweet and juicy; nutlets 3 or 4, acute or acuminate at the base, gradually narrowed and rounded at the apex, ridged on the back, with a broad deeply grooved ridge, 6–7 mm long, and 4–4.5 mm wide.

An arborescent shrub 3–4 m high, with a short stem sometimes 1.5 dm in diameter, covered near the ground with dark scaly bark, small ascending and spreading branches, and slender nearly straight glabrous-branchlets, dark orange-green tinged with red when they first appear, becoming dark chestnut-brown, lustrous and marked by pale lenticels in their first season and dull red-brown the follow-

ing year, and armed with slender slightly curved purple shining spines 2.5–4 cm long.

Coopers Plains, G. D. Cornell (#88, type), September 22, 1906, June 8, 1907.

Anthers pale yellow

Crataegus inusitula Sargent

Rich hillsides, Coopers Plains, G. D. Cornell (#57), May 26 and October 14, 1906, May and September 1907; also at Chapinville, Ontario co.

The Coopers Plains plant differs from the type of Crataegus inusitula in the fewer hairs on the pedicels, which are sometimes nearly glabrous.

TENUIFOLIAE

Stamens 10 or less; anthers rose color, red or pink

Crataegus ignea n. sp.

Glabrous with the exception of the hairs on the upper surface of the young leaves and calyx-lobes. Leaves oblong-ovate, long-pointed and acuminate at the apex, rounded or abruptly concave-cuneate at the entire base, finely often doubly serrate above, with straight glandular teeth, and slightly divided into 4 or 5 pairs of small acuminate spreading lateral lobes; deeply tinged with red and covered on the upper surface with soft white hairs when they unfold, more than half grown when the flowers open at the end of May or early in June, and then thin, yellow-green, still slightly hairy above and pale below, and at maturity thin but firm in texture, dull yellow-green and slightly roughened on the upper surface, pale yellow-green on the lower surface, 4–5 cm long and 2.5–4 cm wide, with thin yellow midribs and primary veins; petioles slender, slightly wing-margined at the apex, sparingly villose while young, soon becoming glabrous, occasionally glandular, often dark rose color in the autumn, 1.5–2.5 cm in length; stipules linear to lanceolate, glandular, with bright red glands, green, caducous; leaves on vigorous shoots thick, ovate, acute, rounded, truncate or subcordate at the broad base, more coarsely serrate, more deeply lobed, and often 6–7 cm long and 5–6 cm wide, with thick conspicuously glandular petioles. Flowers 1.5–1.7 cm in diameter, on long slender pedicels, in compact mostly 6–12-flowered corymbs, the elongated lower peduncles from the axils of upper leaves; calyx-tube narrowly obconic, the lobes slender, red and acuminate at the apex, very

minutely glandular serrate or entire, glabrous on the outer, slightly villose on the inner surface, reflexed after anthesis; stamens 7–10; anthers dark rose color; styles 2–4, usually 3. Fruit ripening at the end of September, on slender drooping or spreading reddish pedicels, in few-fruited clusters, short-oblong, truncate at the ends, scarlet, lustrous, marked by small pale dots, about 1 cm long and 8–9 mm in diameter; calyx little enlarged, with a deep narrow cavity, and spreading slightly incurved persistent lobes; flesh thick, pale yellow; nutlets 3 or 4, narrowed and rounded at the ends, ridged on the back, with a broad low grooved ridge, about 6 mm long, and 4.5–5 mm wide.

A shrub sometimes 3–4 m high, with stems covered with ashy gray bark, ascending branches forming a narrow rather open head, and extremely slender slightly zigzag branchlets deeply tinged with red when they first appear, becoming dark chestnut-brown, lustrous and marked by small pale lenticels in their first season and dull red-brown the following year, and armed with stout straight or slightly curved light chestnut-brown shining spines 2.5–4 cm long.

Rich hillsides, Coopers Plains, G. D. Cornell (№ 83, type), September 22, 1906, June 5, 1907..

Crataegus recta n. sp.

Glabrous with the exception of the hairs on the upper side of the young leaves. Leaves ovate, long-pointed and acuminate at the apex, rounded or abruptly concave-cuneate at the base, finely often doubly serrate, with straight or incurved glandular teeth, and slightly divided into 5 or 6 pairs of small acuminate spreading lobes; deeply tinged with red and roughened on the upper surface by short white hairs when they unfold, more than half grown when the flowers open at the end of May or early in June, and then thin, yellow-green, still slightly hairy especially along the midribs above, and at maturity thin, yellow-green, lustrous and slightly roughened on the upper surface, paler on the lower surface, 5–6 cm long and 3.5–4.5 cm wide, with slender midribs and thin primary veins extending obliquely to the points of the lobes; petioles slender, slightly wing-margined at the apex, very glandular while young, the glands generally caducous, 1.5–2.5 cm in length; leaves on vigorous shoots coarsely serrate and sometimes 8–9 cm long and 5–6 cm wide, with foliaceous lunate persistent stipules. Flowers 1.5–1.8 cm in diamter on long slender pedicels, in compact mostly 5–12-flowered corymbs, the elongated lower peduncles from the axils of upper

leaves; calyx-tube narrowly obconic, gradually narrowed from the base, the lobes long, slender, acuminate, deep rose color above the middle, glandular serrate, reflexed after anthesis; stamens 5–9; anthers light rose color; styles 2 or 3. Fruit ripening the middle of September, on slender drooping pedicels, in few-fruited clusters, short-oblong, truncate at the apex, rounded and depressed at the base, scarlet, lustrous, marked by pale dots, 9–10 mm long and 8–9 mm in diameter; calyx little enlarged, with a deep narrow cavity tomentose in the bottom, and small spreading or incurved persistent lobes; flesh thin, light orange color; nutlets 2 or 3, gradually narrowed and rounded at the ends, ridged on the back, with a low broad grooved ridge, about 5 mm long and 4 mm wide.

A narrow shrub sometimes 4 m high, with fastigiately erect stems covered with dark green bark scaly near the ground, erect branches and stout nearly straight branchlets dark green when they first appear, becoming light chestnut-brown, lustrous and marked by large pale lenticels in their first season and dull reddish brown the following year, and armed with stout straight or slightly curved light chestnut-brown ultimately gray spines 2.5–3.5 cm long.

Rich hillsides, Coopers Plains, G. D. Cornell (#85, type), September 16, 1906, June 3, 1907, (#81), June and September 1907.

Crataegus spatifolia n. sp.

Glabrous with the exception of the hairs on the upper surface of the young leaves. Leaves oblong-ovate, long-pointed and acuminate at the apex, rounded, subcordate or abruptly cuneate at the broad base, finely often doubly serrate, with straight glandular teeth, and divided into 5–7 pairs of broad acuminate spreading or reflexed lateral lobes; more than half grown when the flowers open about the 1st of June and then thin, yellow-green, slightly hairy and rough above, and at maturity thin, dark yellow-green, smooth and lustrous on the upper surface, pale bluish green on the lower surface, 6–7 cm long and 5–6 cm wide, with slender midribs, and thin primary veins arching obliquely to the points of the lobes; petioles slender, slightly wing-margined at the apex, occasionally glandular, 3–3.5 cm in length; leaves on vigorous shoots subcoriaceous, cordate or truncate at the base, more coarsely serrate and more deeply lobed, and often 6–7 cm long and wide. Flowers 1.4–1.9 cm in diameter, on long slender pedicels, in wide lax mostly 8–16-flowered corymbs, the elongated lower peduncles from the axils of upper leaves; calyx-tube narrowly obconic, the lobes gradually narrowed from the base,

long, slender, red and glandular at the acuminate apex, entire or minutely glandular dentate, reflexed after anthesis; stamens 8–10; anthers pale rose color; styles 3 or 4. Fruit ripening at the end of September, on long drooping reddish pedicels, in few-fruited clusters, short-oblong, full and rounded at the ends, crimson, lustrous, marked by large pale dots, 1–1.1 cm long and 8–9 mm in diameter; calyx little enlarged, with a deep narrow cavity, and spreading often incurved persistent lobes; flesh thin, light yellow; nutlets 2–4, gradually narrowed and rounded or acute at the ends, ridged on the back, with a low grooved ridge, 6–6.5 mm long, and 4–4.5 mm wide.

A shrub 4–5 m high, with stems covered with greenish gray bark, ascending branches, and stout nearly straight branchlets dark orange-green more or less tinged with red when they first appear, becoming dark chestnut-brown, lustrous and marked by pale lenticels in their first season and dull gray-brown the following year, and armed with slender slightly curved dark red-brown shining spines 3–4 cm long.

Hillsides near Coopers Plains, G. D. Cornell (#90, type), September 27, 1906, June 8, 1907.

Crataegus fucata n. sp.

Glabrous with the exception of the hairs on the young leaves and calyx-lobes. Leaves ovate, long-pointed and acuminate at the apex, rounded or abruptly cuneate at the often glandular base, sharply doubly serrate above, with straight glandular teeth, and slightly divided usually only above the middle into 3 or 4 pairs of small acuminate spreading lobes; when they unfold slightly tinged with red, covered above by short white hairs and glabrous below, about a quarter grown when the flowers open in the last week of May and then very thin, light yellow-green and still hairy on the upper surface, and at maturity thin but firm in texture, dark yellow-green and slightly roughened above and pale bluish green below, 5–6 cm long and 4.5–5 cm wide, with thin yellow midribs and primary veins; petioles slender, slightly wing-margined at the apex, glandular while young, with mostly deciduous glands, often rose color in the autumn, 2–3 cm in length; leaves on vigorous shoots rounded or subcordate at the base, coarsely serrate, deeply lobed and often 5.5–6 cm long and broad. Flowers about 1.5 cm in diameter, on slender pedicels, in small compact mostly 8–10-flowered corymbs, the lowest peduncle from the axil of an upper leaf; calyx-tube

narrowly obconic, the lobes slender, acuminate, minutely dentate or entire, glabrous on the outer, furnished on the inner surface with occasional hairs, reflexed after anthesis; stamens 5–9; anthers dark rose color; styles 3–5, surrounded at the base by a narrow ring of pale tomentum. Fruit ripening and falling late in September, on slender drooping pedicels, in few-fruited clusters, short-oblong to oval, slightly narrowed at the ends, often unsymmetrical and somewhat mammillate at the base, crimson, lustrous, 9–10 mm long and 8–9 mm in diameter; calyx little enlarged, with a wide shallow cavity, and spreading and appressed lobes, red and sparingly villose on the upper side; flesh thin, yellow, slightly tinged with red; nutlets usually 3 or 4, narrowed and rounded at the ends, ridged on the back, with a broad high doubly grooved ridge, 5–6 mm long, and 4–4.5 mm wide.

A shrub 3–4 m high, with ascending and spreading flexuose stems forming a wide open head and covered below with ashy gray bark, small spreading branches, and slender zigzag branchlets dark orange-green and marked by pale lenticels when they first appear, becoming bright chestnut-brown and lustrous in their first season and dull red-brown the following year, and armed with numerous stout straight or slightly curved chestnut-brown shining spines 3.5–4.5 cm long.

Rich hillsides, Coopers Plains, G. D. Cornell (#62, type), May 26 and September 21, 1906, May and September 1907.

Crataegus nescia n. sp.

Glabrous with the exception of the hairs on the young leaves and petioles. Leaves ovate, acuminate, cuneate or on vigorous shoots truncate or rounded at the entire base, sharply often doubly serrate above, with straight glandular teeth, and slightly divided into 4 or 5 pairs of narrow acuminate spreading lateral lobes; more than half grown when the flowers open about the 20th of May and then very thin, light yellow-green and roughened above by short white hairs and paler and glabrous below, and at maturity thin, yellow-green, smooth and glabrous on the upper surface, light bluish green on the lower surface, 4–6 cm long and 3.5–5 cm wide, with thin midribs and primary veins; petioles slender, slightly wing-margined at the apex, sparingly hairy on the upper side while young, soon becoming glabrous, 1.5–2.5 cm in length. Flowers 1.5–1.8 cm in diameter, on long slender pedicels, in small compact mostly 5–12-flowered corymbs, the lower peduncles from the axils of upper leaves; calyx-

tube narrowly obconic, the lobes slender, acuminate, entire or minutely glandular dentate near the middle, reflexed after anthesis; stamens 4–8; anthers bright pink; styles 2–4, usually 3, surrounded at the base by a narrow ring of pale tomentum. Fruit ripening and falling early in October, on slender drooping pedicels, in few-fruited clusters, short-oblong to slightly obovate, full and rounded at the ends, scarlet, lustrous, marked by small pale dots, 1–1.2 cm long and 9–10 mm in diameter; calyx little enlarged, with a deep narrow cavity and spreading and appressed or incurved generally persistent lobes dark red on the upper side below the middle; flesh thin, yellow tinged with pink; sweet and juicy; nutlets usually 3, narrowed and rounded at the ends, ridged on the back, with a broad deeply grooved ridge, 5.5–6 mm long, and 4–4.5 mm wide.

A slender shrub 3–4 m high, with stems spreading into small clumps, and covered with light gray bark scaly near the ground, long slender ascending dark greenish branches, and slender wand-like conspicuously zigzag branchlets dark orange-green when they first appear, becoming light chestnut-brown, lustrous, and marked by pale lenticels in their first season and light gray-brown the following year, and armed with stout straight or usually slightly curved chestnut-brown shining spines 2.5–4 cm long.

Rich hillsides, near Coopers Plains, G. D. Cornell (#46, type), May 25 and October 3, 1906.

Crataegus insignata n. sp.

Glabrous with the exception of the hairs on the young leaves. Leaves ovate, acuminate, rounded or abruptly cuneate at the base, finely often doubly serrate, with straight glandular teeth, and slightly divided usually only above the middle into 5 or 6 pairs of narrow acuminate spreading lobes; more than half grown when the flowers open about the 20th of May and then thin, yellow-green and roughened above by short white hairs, and at maturity thin, yellow-green, scabrate on the upper surface, paler on the lower surface, 5–6 cm long and 4.5–6 cm wide, with stout midribs, and thin prominent primary veins extending to the points of the lobes; petioles slender, slightly wing-margined at the apex, 3–3.5 cm in length. Flowers 1.3–1.6 cm in diameter, on short slender pedicels, in compact mostly 6–14-flowered corymbs, the elongated lower peduncles from the axils of upper leaves; calyx-tube narrowly obconic, the lobes long, slender, acuminate, entire or minutely glandular dentate below the middle, reflexed after anthesis; stamens 5–8; anthers pale rose

color; styles 2–5, usually 3 or 4, surrounded at the base by a narrow ring of pale tomentum. Fruit ripening late in October, on short pedicels, in few-fruited drooping clusters, short-oblong, slightly narrowed to the rounded ends, deeply impressed at the insertion of the stalk, dull red, 9–10 mm long, and 8–9 mm in diameter; calyx little enlarged, with a deep narrow cavity tomentose in the bottom, and spreading and appressed lobes, their tips often deciduous from the ripe fruit; flesh thin, orange color, sweet and juicy; nutlets usually 3 or 4, narrowed and rounded at the ends, ridged on the back, with a broad deeply grooved ridge, 6–6.5 mm long, and 4–4.5 mm wide.

A shrub 4–5 m high, with numerous small ascending stems covered near the ground with ashy gray scaly bark, small spreading gray-brown branches, and stout slightly zigzag branchlets dark orange-green and marked by pale lenticels when they first appear, becoming dark chestnut-brown or purple and lustrous in their first season and dull gray-brown the following year, and armed with few stout slightly curved light chestnut-brown ultimately gray spines 2–2.5 cm long.

Hillsides, Coopers Plains, G. D. Cornell (#63, type), May 23 and September 21, 1906.

Crataegus bella Sargent

Hillsides, Coopers Plains, G. D. Cornell (#31), September 21, 1905, May 20, 1906; also at Buffalo, and at Chippewa, Ontario.

Crataegus genialis Sargent

Rhodora V. 148 (1903).

Hillsides, Coopers Plains, G. D. Cornell (#44), September 24, 1905, May 25, 1906, May and September 1907 (#47), September 28, 1905, May 24 and September 4, 1906.

Crataegus suavis Sargent

Hillsides, Coopers Plains, G. D. Cornell (99), September 22, 1906, June 3, 1907; also at Buffalo.

Crataegus glaucophylla Sargent

Rhodora V. 140 (1903); Rochester Acad. Sci. Proc. IV. 120 (1903).

Hillsides, Coopers Plains, G. D. Cornell (#48), September 28, 1905, May 23, 1906; also southern Michigan and through Ontario to western New England.

Crataegus matura Sargent

Rhodora III. 24 (1901); V. 144 (1903).

Hillsides, Coopers Plains, G. D. Cornell (#21), September 21, 1905, May 21, 1906, (#59) May 24 and September 21, 1906; also Genesee valley, New York to western New England.

Crataegus streeterae Sargent

Rochester Acad. Sci. Proc. IV. 119 (1903).

Hillsides, Coopers Plains, G. D. Cornell (#5), September 21, 1905, May 24, 1906, (#82) September 16, 1906, May 30, 1907; also at Rochester, Buffalo, Niagara Falls, New York, and in southern Michigan.

Crataegus ornata Sargent

Rochester Acad. Sci. Proc. IV. 120 (1903).

Hillsides, Coopers Plains, G. D. Cornell (#95), September 21, 1906, June 2, 1907; also valley of the Genesee river, New York and southern Ontario.

FLABELLATAE

Crataegus steubenensis n. sp.

Leaves ovate, long-pointed and acuminate, rounded at the base, finely often doubly serrate, with straight or reflexed glandular teeth, and slightly divided above the middle into 5 or 6 pairs of small spreading acuminate lobes; slightly tinged with red when they unfold, nearly half grown when the flowers open about the 20th of May and then thin, yellow-green and strigose above and paler and glabrous below, and at maturity thin but firm in texture, yellow-green and scabrate above, pale below, 5–6 cm long and 4.5–5 cm wide, with thin prominent midribs often rose color late in the season, and conspicuous primary veins extending obliquely to the points of the lobes; petioles slender, slightly wing-margined at the apex, villose while young, becoming glabrous, occasionally sparingly glandular, often rose color in the autumn, 2.5–3 cm in length. Flowers 2–2.3 cm in diameter, on long slender sparingly villose pedicels, in lax mostly 7–14-flowered corymbs, the elongated lower peduncles from the axils of upper leaves; calyx-tube narrowly obconic, the lobes long, slender, acuminate, glandular serrate, glabrous on the outer, slightly villose on the inner surface, reflexed after anthesis; stamens 20; anthers pale rose color; styles 3–5, usually 5. Fruit ripening the end of September, on long slender glabrous

red drooping pedicels, in few-fruited clusters, obovate, full and rounded at the apex, abruptly narrowed at the base, scarlet, lustrous, marked by large pale dots, 1–1.2 cm long, and 9–10 mm in diameter; calyx prominent, with a broad deep cavity, and elongated spreading persistent lobes; flesh thick, yellow, sweet and juicy; nutlets usually 5, thin and acute at the ends, flat and slightly grooved on the back, 6–6.5 mm long, and 4–4.5 mm wide.

A narrow shrub 3–4 m high, with small stems covered with pale gray bark, erect branches forming a narrow open head, and stout slightly zigzag branchlets deeply tinged with red when they first appear, becoming light orange-brown, lustrous and marked by numerous pale lenticels in their first season and dull gray-brown the following year, and armed with few stout slightly curved light chestnut-brown shining spines 2–2.5 cm long.

Hillsides, Coopers Plains, G. D. Cornell (#49, type), September 28, 1905, May 21 and September 21, 1906.

COCCINEAE

Crataegus dodgei Ashe

Jour. Elisha Mitchell Sci. Soc. XIX. 26 (March 1903). Sargent, Acad. Sci. Phila. Proc. 632 (1905); Rhodora VII. 213 (1905).

Moist hillsides near Coopers Plains, G. D. Cornell (#30), September 21, 1905, May 26, 1906; also southern Michigan to southern New England.

INTRICATAE

Stamens 10; anthers pale yellow

Crataegus intricata Lange

Bot. Tidskr. XIX. 246 (1894). Sargent, Rhodora III. 28 (1001).

Moist hillsides, Coopers Plains, G. D. Cornell (#25), September 30, 1905, June 2, 1906, September 1907; also eastern New York and western and southern New England.

Crataegus foetida Ashe

Ann. Carnegie Mus. I, pt III. 380 (1902). Sargent, Acad. Sci. Phila. Proc. 641 (1905); Rhodora VII. 219 (1905).

Moist hillsides, Coopers Plains, G. D. Cornell (#34), October 1, 1905, June 2, 1906, (#55) October 8, 1905, June 4, 1906, (#98) September 1907; also Genesee valley, New York to western Massachusetts and eastern Pennsylvania.

Crataegus verecunda Sargent

Rochester Acad. Sci. Proc. IV. 109 (1903).

Moist hillsides, near Coopers Plains, G. D. Cornell (# 51), October 1, 1905, June 2, 1906 (# 56), October 8, 1905, May 30, 1906; grooved ridge, 7–8 mm long, and 4.5–5 mm wide.
also at Rochester and near Albany, N. Y.

Crataegus cornellii n. sp.

Glabrous with the exception of the hairs on the upper surface of the young leaves. Leaves oval and acuminate at the ends to ovate-acute and abruptly cuneate at the base, finely doubly serrate, with straight glandular teeth, and divided into 4 or 5 pairs of small acuminate lateral lobes; about half grown when the flowers open late in May or early in June and then very thin, dark yellow-green and slightly hairy above, especially on the midribs and veins, and paler below, and at maturity thin but firm in texture, dark yellow-green, smooth and glabrous on the upper surface, pale yellow-green on the lower surface, 4–4.5 cm long and 3–4 cm wide, with thin midribs and primary veins; petioles slender, slightly wing-margined at the apex, often rose color in the autumn, 1–1.2 cm in length; leaves on vigorous shoots ovate, truncate at the broad base, deeply 3-lobed by narrow sinuses, the terminal lobe often lobed toward the apex, and 3.5–5.5 cm long and broad, with stouter glandular petioles. Flowers about 1.5 cm in diameter, on short slender pedicels, in compact mostly 4–10-flowered simple corymbs, with linear-obovate to linear conspicuously glandular bracts and branchlets fading rose color; calyx-tube narrowly obconic, the lobes broad, acuminate, glandular serrate, often widened and laciniately divided toward the apex, reflexed after anthesis; stamens 10; anthers pale yellow; styles 3–5, usually 3. Fruit ripening the end of September, on short stout erect or spreading pedicels, in few-fruited clusters, obovate, rounded at the apex, abruptly narrowed at the base, light orange-yellow, lustrous, marked by small dark dots, 1.3–1.4 cm long and 1–1.2 cm in diameter; calyx very prominent, with a short tube, a wide deep cavity, and elongated spreading and appressed persistent lobes dark red on the upper side below the middle; flesh thin, yellow, dry and hard; nutlets usually 3, rounded and obtuse at the ends, ridged on the back, with a broad low slightly grooved ridge, 7–8 mm long and 4.5–5 mm wide.

A shrub about 1 m high, with small intricately branched erect stems, and slender nearly straight branchlets deeply tinged with red when they first appear, becoming bright chestnut-brown, lustrous, and marked by small pale lenticels in their first season and dull red brown the following year, and armed with very numerous slender nearly straight chestnut-brown shining spines 5.5–6 cm long.

Moist hillsides, Coopers Plains, C. H. Peck (#67, type), June 2 and September 21, 1906.

I am glad to associate with this distinct and pretty species the name of the industrious and careful student of the thorns which cover the hills surrounding his home.

Crataegus modesta Sargent

Rhodora III. 28 (1901); Acad. Sci. Phila. Proc. 635 (1905).

Moist hillsides, Coopers Plains, G. D. Cornell (#39), September 21, 1905, June 2, 1906; also western Vermont and eastern New York to eastern Pennsylvania.

ANOMALAE.

Stamens 10 or less; anthers rose color

Crataegus singularis n. sp.

Leaves ovate to oval, long-pointed and acuminate at the apex, gradually or abruptly narrowed to the concave-cuneate or rounded entire base, coarsely often doubly serrate above with straight glandular teeth, and slightly divided usually only above the middle into 5 or 6 pairs of small acuminate spreading lobes; nearly half grown when the flowers open about the 20th of May and then very thin, convex, dark yellow-green and strigose above and pale yellow-green and slightly villose along the primary veins below, and at maturity thin, glabrous, dark yellow-green and scabrate on the upper surface, light yellow-green and glabrous on the lower surface, 6–7 cm long and 4–4.5 cm wide, with slender yellow midribs and primary veins; turning yellow in the autumn before falling; petioles slender, slightly wing-margined at the apex, sparingly hairy on the upper side while young, soon becoming glabrous, glandular, with minute dark glands, often rose color in the autumn, 2–3 cm in length; leaves on vigorous shoots long-pointed, narrowed and rounded at the base, more coarsely serrate, deeply lobed, with slender acuminate lobes, often 6–7 cm long and 5.5–6 cm wide. Flowers 1.5–1.9 cm in diameter, on long slender slightly villose

pedicels, in compact mostly 6–15-flowered corymbs, the elongated lower peduncles from the axils of upper leaves; calyx-tube narrowly obconic, glabrous, the lobes long, slender, red and acuminate at the apex, finely glandular serrate, glabrous on the outer, slightly villose on the inner surface, reflexed after anthesis; stamens 5–8; anthers dark rose color; styles 2–4, usually 3. Fruit ripening from the middle to the end of September, on slender drooping pedicels, in few-fruited clusters, short-oblong, full and rounded at the ends, scarlet, lustrous, marked by large pale dots, 1.3–1.5 cm long, 8–10 mm in diameter; calyx little enlarged, with a narrow deep cavity, and elongated spreading and incurved lobes slightly hairy on the upper side; flesh orange-yellow slightly tinged with pink, thick and juicy; nutlets 2 or 3, full and rounded at the ends, or when 3 gradually narrowed at the ends, ridged on the back, with a broad low slightly grooved ridge, marked on the inner faces by broad depressions, 6–7 mm long, and about 4 mm wide.

A shrub 2–3 m high, with stems covered with gray-brown bark, ascending and spreading branches, and stout slightly zigzag glabrous branchlets light orange-green and marked by pale lenticels when they first appear, becoming light olive-green, lustrous and marked by small pale lenticels in their first season and dull gray-brown the following year, and armed with stout slightly curved light red-brown ultimately dark gray spines 3.5–4 cm long.

Rich hillsides, Coopers Plains, G. D. Cornell (#20, type), September 21, 1905, May 24, 1906 (#26, with less deeply divided leaves and nearly glabrous pedicels), September 21, 1905, May 14, 1906.

Crataegus repulsans n. sp.

Leaves ovate to rhombic, acuminate and long-pointed at the apex, abruptly or gradually narrowed and concave-cuneate at the entire base, finely often doubly serrate above, with straight or incurved glandular teeth, and slightly divided usually only above the middle into short broad acuminate spreading lobes; nearly fully grown when the flowers open in the last week of May and then thin, yellow-green and strigose above and pale and glabrous below, and at maturity thin but firm in texture, dull yellow-green, glabrous and scabrate on the upper surface, paler on the lower surface, 4–5 cm long and 3–3.5 cm wide, with thin yellow midribs and primary veins; petioles slender, slightly wing-margined at the apex, spar-

ingly hairy on the upper side while young, soon becoming glabrous, 1.2–1.6 cm in length; leaves on vigorous shoots abruptly narrowed at the apex into long broad acuminate points, gradually narrowed to the rounded base, thicker, more coarsely serrate, and often 7–8 cm long and 5–5.5 cm wide, with stout rose colored petioles. Flowers 1.5–1.9 cm in diameter, on long slender slightly villose pedicels, in small mostly 5–8-flowered corymbs, the elongated lower peduncles from the axils of upper leaves; calyx-tube narrowly obconic, glabrous, the lobes gradually narrowed from the base, red and glandular at the acuminate apex, minutely glandular serrate, glabrous on the outer, slightly villose on the inner surface, reflexed after anthesis; stamens 5–9; anthers rose color; styles 1–3, usually 2. Fruit ripening the end of September, on slender slightly hairy erect pedicels, in few-fruited clusters, short-oblong to subglobose, orange-red, lustrous, marked by small pale dots, 9–10 mm in diameter; calyx prominent, with a deep wide cavity, and elongated spreading and appressed lobes villose on the upper surface; flesh yellow, dry and mealy; nutlets 2 or 3, gradually narrowed and rounded at the ends, or when 3 acuminate at the base and broad and rounded at the apex, ridged on the back, with a broad low grooved ridge, marked on the inner face, by broad depressions, 6–6.5 mm long, and 3.5–4 mm wide.

A shrub 3–4 m high, with stems covered with greenish gray bark, ascending branches, and stout slightly zigzag glabrous branchlets dark orange-green and marked by pale lenticels when they first appear, becoming bright orange-brown and very lustrous in their first season and pale gray-brown the following year, and armed with very numerous stout straight or slightly curved light chestnut-brown shining spines 4–5 cm long.

Rich hillsides, Coopers Plains, G. D. Cornell (*45, type), September 24, 1905, May 28, 1906.

Crataegus inopinata n. sp.

Leaves ovate to oval, acuminate, cuneate or rounded at the entire base, coarsely doubly serrate above, with straight glandular teeth, and occasionally very slightly divided above the middle into small acute lobes; bronze color when they unfold, about half grown when the flowers open in the last week of May and then thin, light yellow-green and roughened above by short white hairs and pale and slightly villose in the axils of the veins below, and at maturity thin but firm in texture, dark yellow-green and scabrate on the upper surface, light yellow-green and glabrous on the lower sur-

face, 4.5–6 cm long and 4–5 cm wide, with thin prominent yellow midribs and primary veins; petioles stout, slightly wing-margined at the apex, glabrous, sparingly glandular early in the season, usually with deciduous glands, generally rose color in the autumn, 2–3 cm in length; leaves on vigorous shoots rounded at the base, coarsely serrate, rarely slightly lobed, and often 8–10 cm long and 6–7.5 cm wide, with stout broadly winged conspicuously glandular petioles. Flowers 1–1.2 cm in diameter, on slender slightly villose pedicels, in narrow compact mostly 10–16-flowered corymbs; calyx-tube narrowly obconic, glabrous, the lobes wide, acuminate and red at the apex, glandular serrate, glabrous on the outer, villose on the inner surface, reflexed after anthesis; stamens 5–7; anthers pale rose color; styles 2 or 3, surrounded at the base by a narrow ring of long white hairs. Fruit ripening the end of September, on stout slightly spreading pedicels, in few-fruited clusters, subglobose, dark red, lustrous, marked by small pale dots, 1–1.1 cm in diameter; calyx little enlarged, with a broad shallow cavity, small spreading and closely appressed persistent lobes villose and dark red on the upper side; flesh thick, juicy, orange color; nutlets 2 or 3, rounded at the ends, ridged on the back, with a broad high doubly grooved ridge slightly penetrated on the inner faces by wide depressions, 5–5.5 mm long, and 3.5–4 mm wide.

A shrub occasionally 6–8 but more often 3–4 m high, with stout stems covered with dark bark scaly near the ground, ascending branches forming an open irregular head, and stout slightly zigzag glabrous branchlets dark orange-yellow and marked by pale lenticels when they first appear, becoming dark chestnut-brown and lustrous in their first season and dull reddish brown the following year, and armed with numerous stout straight or slightly curved chestnut-brown shining spines 3.5–6 cm long.

Rich hillsides, near Coopers Plains, G. D. Cornell (№ 60, type), May 26 and September 21, 1906, June and September, 1907.

TOMENTOSAE

Leaves thin

Anthers rose color; stamens 12–20

Crataegus diversa n. sp.

Leaves oblong-obovate, acute, acuminate or rarely rounded at the apex, gradually narrowed to the long concave-cuneate entire base, coarsely often doubly serrate above, with straight glandular

teeth, and sometimes slightly divided above the middle into 2 or 3 pairs of small acute lobes; nearly half grown when the flowers open the middle of June and then thin, light yellow-green and slightly roughened above by short white hairs and pale and villose on the midribs and veins below, and at maturity thin but firm in texture, dark yellow-green, glabrous and smooth on the upper surface, still villose on the lower surface along the stout midribs and prominent primary veins, 6–8 cm long and 4.5–5 cm wide; petioles stout, wing-margined to below the middle, tomentose early in the season, becoming pubescent or nearly glabrous, 8–12 mm in length. Flowers 1.3–1.6 cm in diameter, on short stout villose pedicels, in compact mostly 15–18-flowered hairy corymbs, the elongated lower peduncles from the axils of upper leaves; calyx-tube narrowly obconic, coated with long matted white hairs, the lobes long, slender, acuminate, glabrous on the outer, villose on the inner surface, reflexed after anthesis; stamens 12–20; anthers rose color; styles 2, surrounded at the base by a narrow ring of pale tomentum. Fruit ripening late in September, on slightly hairy red drooping pedicels, in few-fruited clusters, oval or slightly obovate, crimson, lustrous, marked by small pale dots, 9–10 mm long, and 6–7 in diameter; calyx little enlarged, with a short tube, a deep wide cavity, and small spreading and appressed often deciduous lobes dark red and villose on the upper side; flesh thin, yellow, dry and mealy; nutlets 2, rounded at the ends, rounded and slightly ridged on the back, penetrated on the inner faces by large deep cavities, 5–5.5 mm long, and 3–3.5 mm wide.

A shrub 3–4 m high, with numerous small erect stems covered with ashy gray bark, small ascending slightly spreading branches forming an open head, slender nearly straight branchlets covered when they first appear with long matted white hairs, becoming light orange-brown or chestnut-brown, lustrous, puberulous and marked by pale lenticels at the end of their first season, and dull reddish brown in their second or third years, and armed with straight slender chestnut-brown and shining ultimately dull gray spines 3–4 cm long, occasionally persistent and compound on old stems.

Hillsides, near Coopers Plains, G. D. Cornell (#70, type), June 18 and September 21, 1906 (#78), June and October 1906, 1907.

Well distinguished from Crataegus tomentosa Linnæus, by the color of the branches and spines, the smaller number of stamens, and by the shape and color of the fruit.

Anthers pink; stamens 20

Crataegus spinifera n. sp.

Leaves ovate to obovate, acute or acuminate, gradually narrowed and concave-cuneate at the entire base, and sharply often doubly serrate above, with straight glandular teeth; about one third grown when the flowers open the 1st of June and then very thin, dark yellow-green and covered above by soft white hairs and pale and villose below along the midribs and veins, and at maturity thin but firm in texture, yellow-green, smooth and lustrous on the upper surface, pale bluish green and still slightly villose on the lower surface on the stout yellow midribs and slender primary veins, 5.5–7 cm long and 3.5–5 cm wide; petioles stout, narrow wing-margined to below the middle, slightly hairy on the upper side while young, soon becoming glabrous, 1–2 cm in length; leaves on vigorous shoots abruptly cuneate or rounded at the base, often slightly lobed toward the apex, and frequently 7–8 cm long and 5–6 cm wide. Flowers about 1.5 cm in diameter, on slender villose pedicels, in broad lax hairy mostly 20–30-flowered corymbs, the elongated lower peduncles from the axils of upper leaves; calyx-tube narrowly obconic, coated with long matted white hairs, the lobes long, slender, glandular serrate, villose, reflexed after anthesis; stamens 20; anthers pale pink; styles 2–4. Fruit ripening the end of September, on long stout slightly hairy red drooping pedicels, in broad many-fruited clusters, subglobose to slightly ovate, scarlet, lustrous, sparingly hairy at the ends, marked by large pale dots, becoming soft and succulent, 1–1.2 cm in diameter; calyx little enlarged, with a deep narrow cavity, and small spreading and appressed lobes hairy on the upper side; flesh yellow, thin and dry; nutlets 2–4, slightly narrowed and rounded at the ends, ridged on the back, with a broad low grooved ridge, irregularly penetrated on the inner faces by broad deep cavities, 6–7 mm long, and 4–5 mm wide.

A dense round-topped shrub 3–4 m high, with small intricately branched stems spreading in thickets and covered with dark gray-brown scaly bark, ascending flexuous greenish gray branches, and slender slightly zigzag glabrous branchlets dark orange-green and marked by pale lenticels when they first appear, becoming orange-brown and lustrous in their first season and dull gray-brown the following year, and armed with numerous stout nearly straight purple shining spines 4–5 cm long.

Hiliside, Coopers Plains, G. D. Cornell (✱66, type), June 4 and September 21, 1906.

Anthers pale yellow; stamens 20

Crataegus structilis Ashe

Jour. Elisha Mitchell Sci. Soc. XIX. 12 (1903). Sargent, Acad. Sci. Phila. Proc. 656 (1905).

Hillsides, near Coopers Plains, G. D. Cornell (✱50), September 30, 1905, June 18, 1906, (✱52), June 13 and September 21, 1906, (✱69), June 18 and September 21, 1906, (✱71), with stamens sometimes reduced to 15), June and September 1906; also Illinois and southern Michigan, and through southern Ontario to the valley of the Genesee river, New York and eastern Pennsylvania.

Crataegus comans n. sp.

Leaves ovate to rhombic, acute at the apex, concave-cuneate at the entire base, and coarsely doubly serrate above, with straight glandular teeth; tinged with red when they unfold, about half grown when the flowers open from the 10th to the middle of June and then thin, yellow-green and roughened above by short white hairs most abundant on the midribs and veins, paler and villose below especially on the midribs and veins, and at maturity thin but firm in texture, dull yellow-green, smooth and lustrous on the upper surface, pale yellow-green and still villose below, 4.5–6 cm long and 3.5–5 cm wide, with stout midribs, often rose color in the autumn, and thin prominent primary veins; petioles stout, wing-margined nearly to the base, villose, 4–5 mm in length. Flowers 1.2–1.5 cm in diameter, on short stout densely villose pedicels, in very compact hairy mostly 10–15-flowered corymbs, the lower peduncles from the axils of upper leaves; calyx-tube narrowly obconic, slightly hairy, the lobes short, slender, minutely glandular serrate, nearly glabrous on the outer, slightly hairy on the inner surface, reflexed after anthesis; petals sometimes tinged with pink; stamens 20; anthers pale yellow; styles 2 or 3. Fruit ripening late in September, on long slender hairy erect pedicels, in wide many-fruited clusters, short-oblong to subglobose, orange-red, lustrous, covered with short pale hairs most abundant at the base, 7–8 mm in diameter; calyx little enlarged, with a short tube, a wide deep cavity and small spreading and appressed persistent lobes villose on the upper surface; flesh thin, yellow, becoming soft and

succulent; nutlets usually 2, suborbicular, rounded and slightly grooved on the back, penetrated on the inner faces by broad deep cavities, about 5 mm long, and 2–2.5 mm wide.

A shrub 2–3 m high, with stems covered with pale gray bark, ascending branches, and slender nearly straight branchlets dark orange-red and covered with long matted pale hairs when they first appear, becoming light orange-red and lustrous and still hairy in their first season and dark gray-brown the following year, and armed with slender straight or slightly curved gray spines 2.5–3 cm long.

Hillsides, Coopers Plains, G. D. Cornell (#35, type), June 13 and September 21, 1906.

Leaves thick

Stamens 20; anthers purple

Crataegus frutescens n. sp.

Leaves obovate, gradually narrowed and acute or rounded at the apex, concave-cuneate at the entire base, finely often doubly serrate above, with straight glandular teeth, and slightly divided generally only above the middle into 3 or 4 pairs of small acuminate lobes; faintly tinged with bronze color and slightly hairy above, especially along the midribs, when they unfold, more than half grown when the flowers open late in May or early in June, and then thick, light yellow-green and nearly glabrous above and pale and villose on the midribs and veins below, and at maturity subcoriaceous, conspicuously reticulate venulose, dark yellow-green, smooth and very lustrous on the upper surface, light yellow-green and still slightly hairy on the lower surface along the stout rose colored midribs and slender primary veins, 4–5 cm long and 3.5–4 cm wide; petioles stout, slightly wing-margined to below the middle, sparingly villose while young, soon becoming glabrous, often deep rose color in the autumn, 7–10 mm in length; leaves on vigorous shoots ovate to oval, more coarsely serrate and 6–6.5 cm long and 5–6 cm wide, with stout broadly winged often glandular petioles. Flowers 1.4–1.6 cm in diameter, on slender villose pedicels, in compact mostly 10–15-flowered corymbs, with long narrow obovate to linear acuminate glandular caducous bracts and bractlets, the long lower peduncles from the axils of upper leaves; calyx-tube narrowly obconic, slightly hairy at the base, glabrous above, the lobes gradually narrowed, short, broad, acuminate, finely glandular serrate, glabrous on the outer, slightly villose on the inner surface, reflexed after

anthesis; stamens 20; anthers purple; styles 2 or 3. Fruit ripeni the end of September, on slender slightly hairy erect pedicels, few-fruited clusters, short-oblong, full and rounded at the en scarlet, very lustrous, marked by large pale dots, 7–8 mm in dian ter; calyx little enlarged, with a broad deep cavity, and small spre ing and appressed lobes; flesh yellow, dry; nutlets 2 or 3, gradua narrowed and rounded at the ends, rounded and slightly ridged the back, penetrated on the inner faces by deep narrow cavit 4.5–5 mm long, and about 3 mm wide.

A shrub sometimes 2 m high, with stems covered with d greenish gray bark and spreading into thickets, small ascend branches, slender nearly straight glabrous branchlets light oran green and marked by pale lenticels when they first appear, li chestnut-brown and very lustrous in their first and second seas and dull reddish brown the following year, and armed with num ous stout slightly curved chestnut-brown shining spines 3–4 long, compound and long persistent on old stems, and accresc bright rose colored very conspicuous inner bud scales decidu before the opening of the flower buds.

Coopers Plains, G. D. Cornell (# 37, type), September 21, 19 June 3, 1906.

Stamens 10 or less; anthers pale yellow

Crataegus ferentaria Sargent

Rochester Acad. Sci. Proc. IV. 135 (1903); Rhodora VII. 184 (19

Hillsides, Coopers Plains, G. D. Cornell (# 22), September 1905, June 2, 1906; also southern Ontario to eastern New Engla

NEW YORK SPECIES OF CRATAEGUS FROM VARIOUS LOCALITIES

BY C. S. SARGENT

PRUINOSAE

Crataegus bronxensis n. sp.

Leaves ovate, acuminate, gradually or abruptly narrowed and concave-cuneate at the entire base, sharply often doubly serrate above, with straight glandular teeth, and divided above the middle into 3 or 4 pairs of short acuminate lobes; nearly half grown when the flowers open late in May and then thin, light yellow-green and slightly hairy especially on the midribs above, and paler and sparingly villose along the midribs and veins below, with persistent hairs, and at maturity very thin, dark bluish green and scabrate on the upper surface, pale blue-green on the lower surface, 4.5–5.5 cm long and 3–4 cm wide, with slender midribs, and thin primary veins extending very obliquely to the points of the lobes; petioles slender, wing-margined at the apex, glabrous, glandular, with occasional mostly persistent glands, often rose colored in the autumn, 2.5–3 cm in length; leaves on vigorous shoots sometimes rounded at the broad base, more coarsely serrate and more deeply lobed, and often 6–7 cm long and 5–6 cm wide. Flowers 1.8–2 cm in diameter, on short slender slightly hairy pedicels, in compact mostly 5–7-flowered corymbs, with linear acuminate bracts and bractlets fading brown and often persistent until the flowers open, the lower peduncles from the axils of upper leaves; calyx-tube broadly obconic, glabrous, the lobes abruptly narrowed from wide bases, slender, acuminate, entire or occasionally minutely glandular dentate, glabrous on the outer, slightly villose on the inner surface, reflexed after anthesis; stamens 20; anthers light pink; styles 4 or 5. Fruit on erect slender pedicels, in few-fruited clusters, falling late in the autumn without becoming soft, subglobose or rather broader than high, apple-green, slightly pruinose, becoming lustrous, marked by large dark dots, 1–1.2 cm in diameter; calyx prominent, with a short tube, a broad shallow cavity, and spreading and reflexed often deciduous lobes dark red on the upper side below the middle; flesh thin, green, dry and hard; nutlets 4 or 5, gradually narrowed and rounded at the ends, rounded and grooved or irregularly ridged on the back, 6–6.5 mm long and about 4 mm wide.

A shrub, with slender slightly zigzag glabrous branchlets orange-green more or less tinged with red when they first appear, becoming light chestnut-brown, lustrous and marked by pale lenticels in their first season and dull red-brown the following year, and armed with numerous slender straight or slightly curved chestnut-brown shining spines 3.5–5.5 cm long.

In Bronx park, New York city, W. W. Eggleston (# 154, type), October 5, 1904, May 25, 1907.

Crataegus livingstoniana n. sp.

Glabrous with the exception of the hairs on the upper side of the leaves. Leaves ovate, acuminate, abruptly cuneate or rounded at the entire base, coarsely often doubly serrate above, with straight glandular teeth, and slightly divided into 4 or 5 pairs of small acuminate spreading lobes; about half grown when the flowers open in the last week of May and then very thin, yellow-green and slightly hairy above and pale below, and at maturity thin, light yellow-green, smooth or occasionally hairy and roughened on the upper surface, paler on the lower surface, 5–7 cm long and 4–5.5 cm wide, with thin midribs, and primary veins extending obliquely to the points of the lobes; petioles slender, slightly wing-margined at the apex, occasionally glandular, 1.5–3 cm in length; leaves on vigorous shoots thicker, rounded or cordate at the base, more deeply lobed and more coarsely serrate. Flowers 1.6–1.8 cm in diameter, on long slender pedicels, in mostly 5–8-flowered corymbs, the elongated lower peduncles from the axils of upper leaves; calyx-tube narrowly obconic, the lobes gradually narrowed from the base, long, slender, glandular and acuminate at the apex, minutely glandular dentate, reflexed after anthesis; stamens usually 8; anthers dark red; styles 3–5, surrounded at the base by a narrow ring of pale tomentum. Fruit ripening the middle of October, on stout spreading or drooping pedicels, in few-fruited clusters, short-oblong, full and rounded at the ends, red, lustrous, marked by many small pale dots, 1.2–1.5 cm long and 1–1.2 cm in diameter; calyx prominent, with a deep narrow cavity pointed and tomentose in the bottom, and elongated spreading and incurved persistent lobes dark red on the upper side; nutlets 3–5, narrowed and acute at the ends or when 3 rounded at the ends, rounded and grooved or slightly ridged on the back, 6.5–7 mm long, and about 4 mm wide.

An arborescent shrub sometimes 5–6 m high, with stems 1–1.5 dm in diameter covered with ashy gray bark, ascending branches form-

ing a narrow fastigiate head, and slender nearly straight branchlets dark orange-green and marked by pale lenticels when they first appear, becoming light chestnut-brown and lustrous in their first season, dull gray the following year, and armed with occasional stout nearly straight light chestnut-brown shining spines 2.5–3 cm long.

Roadside, near east bank of Hemlock lake, Livingston co., Henry T. Brown (№ 23, type), May 28 and October 1906, (№ 13) May 28 and October 13, 1906, (№ 18, with 6–8 stamens) May 18 and October 1906, (№ 16, with rather lighter colored anthers) May and October 1906.

Crataegus macera n. sp.

Leaves ovate, rounded, truncate or cuneate at the entire base, finely often doubly serrate above, with glandular teeth, and slightly divided into 5 or 6 pairs of small acuminate lateral lobes; more than half grown when the flowers open the end of May and then thin, dark yellow-green, slightly hairy above and pale and glabrous below, and at maturity very thin, dull yellow-green and scabrate on the upper surface, paler on the lower surface, 4–5 cm long, and 3.5–4 cm wide, with thin midribs and primary veins; petioles slender, slightly wing-margined at the apex, glandular while young, 1.5–2.5 cm in length; leaves on vigorous shoots thin, truncate or rounded at the broad base, more coarsely serrate, more deeply lobed, and often 6.5–7 cm long and 6.6–5 cm wide, with slender rose colored glandular petioles. Flowers about 2 cm in diameter, on long slender glabrous pedicels, in wide mostly 6–10-flowered corymbs, the elongated lower peduncles from the axils of upper leaves; calyx-tube broadly obconic, glabrous, the lobes separated by wide sinuses, gradually narrowed from the base, long, slender, acuminate and glandular at the apex, entire or occasionally glandular dentate above the middle, glabrous on the outer, sparingly villose on the inner surface, reflexed after anthesis; stamens 5–7, usually 7; anthers light rose color; styles 4 or 5, surrounded at the base by a ring of pale tomentum. Fruit ripening the middle of October, on slender drooping pedicels, in few-fruited clusters, subglobose to short-oblong, scarlet, lustrous, marked by small dark dots, about 1 cm in diameter; calyx little enlarged, with a broad deep cavity tomentose on the inner surface, and spreading lobes dark red on the upper side below the middle; flesh yellow-green, dry and mealy; nutlets 4 or 5, gradually narrowed and rounded at the ends or

acute at the base, ridged on the back, with a broad high grooved ridge, 6–6.5 mm long, and 4.5–5 mm wide.

An arborescent shrub 5–6 m high, with numerous light ashy gray stems sometimes 1.3–1.5 dm in diameter, spreading and drooping branches, and slender slightly zigzag branchlets dark orange-green and marked by pale lenticels when they first appear, becoming light chestnut-brown and lustrous in their first season and dull gray-brown the following year, and armed with numerous slender often recurved chestnut-brown shining spines 3.5–4.5 cm long.

Moist soil in dense thickets, near the east bank of Hemlock lake, Livingston co., Henry T. Brown (#22, type), May 28 and October 16, 1906.

TENUIFOLIAE

Crataegus leptopoda n. sp.

Glabrous with the exception of the hairs on the upper surface of the young leaves and petioles. Leaves oblong-ovate, gradually narrowed at the base, finely often doubly serrate, with straight glandular teeth, and slightly divided into 6 or 7 pairs of narrow acuminate spreading lobes; about half grown when the flowers open in the last week of May and then very thin, yellow-green and slightly roughened above by short white hairs and pale below, and at maturity thin, smooth and dull dark yellow-green on the upper surface, paler on the lower surface, 6–7 cm long and 3.5–4 cm wide, with slender midribs and primary veins; petioles very slender, slightly wing-margined at the apex, sparingly hairy on the upper side while young, soon becoming glabrous, glandular, with minute often persistent glands, 2–3 cm in length. Flowers about 1.5 cm in diameter, on long slender pedicels, in mostly 10–12-flowered narrow corymbs, the elongated lower peduncles from the axils of upper leaves; calyx-tube narrowly obconic, the lobes gradually narrowed from the base, long, slender, red and glandular at the acuminate apex, entire or minutely glandular dentate near the middle, reflexed after anthesis; stamens 5–10; anthers dark red or maroon; styles 3 or 4, surrounded at the base by a narrow ring of pale tomentum. Fruit ripening late in September, on long slender drooping pedicels, in few-fruited clusters, obovate, rounded at the apex, gradually narrowed at the base, bright cherry-red, lustrous, marked by small pale dots, 1–1.2 cm long, and 8–9 mm in diameter; calyx little enlarged, with a shallow narrow cavity and erect or incurved persistent lobes dark red on the upper side below the middle; flesh thin, yellow-green and juicy; nutlets 3 or 4, acuminate

at the base, narrow and rounded at the apex, slightly ridged on the back, with a rounded ridge 6–6.5 mm long, and about 4 mm wide.

A shrub sometimes 5 m high, with stout slightly zigzag branchlets dark orange-green and marked by pale lenticels when they first appear, becoming dark chestnut-brown and lustrous in their first season and dull gray-brown the following year, and armed with numerous stout curved or nearly straight chestnut colored shining spines 3.5–4 cm long, persistent and simple on the stem.

East bank of Hemlock lake, Livingston co., H. T. Brown (#26 type), May 28 and October 3, 1906, (#25, with lighter colored anthers) May and September 1906.

Crataegus gracilipes n. sp.

Glabrous with the exception of the hairs on the upper surface of the leaves. Leaves ovate, long-pointed and acuminate at the apex, gradually or abruptly narrowed and concave-cuneate at the entire base, sharply often doubly serrate, with long straight glandular teeth, and divided often only above the middle into 5 or 6 pairs of long slender acuminate spreading lobes; nearly fully grown when the flowers open in the last week of May and then very thin, light yellow-green, lustrous and slightly hairy above and pale and glaucous below, and at maturity thin, scabrate and dull yellow-green above, paler below, 7–8 cm long and 4.5–6 cm wide, with slender midribs and primary veins; petioles slender, slightly wing-margined at the apex, glandular while young, with minute deciduous glands, 3–5 cm in length. Flowers about 1.5 cm in diameter, on long slender pedicels, in mostly 5–12-flowered corymbs, the elongated lower peduncles from the axils of upper leaves; calyx-tube narrowly obconic, the lobes gradually narrowed from the base, slender, very long, acuminate and red at the apex, finely glandular serrate usually only near the middle, reflexed after anthesis; stamens 6–8; anthers light red; styles 3 to 5. Fruit ripening the end of September, on long slender drooping pedicels, in few-fruited clusters, narrow-obovate, gradually narrowed and rounded at the apex, gradually narrowed to the long slender base, scarlet, lustrous, 1.2–1.3 cm long, 6–7 mm wide; calyx little enlarged, with a deep wide cavity, and spreading persistent lobes; flesh yellow-green, thick and juicy; nutlets 3–5, narrowed and acute at the ends, or when 3 broader and rounded at the apex, ridged on the back, with a broad low slightly grooved ridge, 6.5–7 mm long, and 5–5.5 mm wide.

A shrub sometimes 6 m high, with small stems covered with pale gray bark, ascending and drooping tortuous branches, and slender branchlets deeply tinged with red and marked by pale lenticels when they first appear, becoming dark chestnut-brown and lustrous in their first season and dark dull gray-brown the following year, and armed with stout slightly curved or straight dull chestnut-brown spines 2.5–3 cm long.

Thickets in moist soil, near the eastern bank of Hemlock lake, Livingston co., New York, Henry T. Brown (#21, type), May 28 and October 4, 1906.

Crataegus claytoniana n. sp.

Glabrous with the exception of the hairs on the young leaves. Leaves oblong-ovate, acuminate, rounded or abruptly cuneate at the base, finely often doubly serrate above, with straight or incurved glandular teeth, and divided into 4 or 5 pairs of slender spreading acuminate lateral lobes; bronze-red and covered above by short white hairs when they unfold, more than half grown when the flowers open about the 10th of June and then thin, light yellow-green and still hairy above and pale and glabrous below, and at maturity thin, dark yellow-green and slightly roughened on the upper surface, light yellow-green on the lower surface, 3–4.5 cm long and 2.5–3 cm wide, with thin midribs and primary veins; petioles slender, slightly wing-margined at the apex, glandular, with occasional persistent glands, 1.5–2.5 cm in length; leaves on vigorous shoots thicker, long-pointed, rounded or truncate at the broad base, more coarsely serrate and more deeply lobed, and often 5–6 cm long and 4–5 cm wide, with stout rose colored midribs, and conspicuously glandular petioles. Flowers 1–1.2 cm in diameter, on slender pedicels, in small lax 5–10-flowered corymbs, the lower peduncles from the axils of upper leaves; calyx-tube narrowly obconic, the lobes slender, acuminate and red at the apex, entire or occasionally minutely glandular dentate, reflexed after anthesis; stamens 5–8; anthers red; styles 2 or 3. Fruit ripening the end of September, on short drooping pedicels, in 1–3-fruited clusters, subglobose to short-oblong, scarlet, lustrous, 1–1.2 cm long, about 1 cm in diameter; calyx little enlarged, with a wide shallow cavity, and spreading mostly persistent lobes bright red on the upper side below the middle; flesh thick, rather juicy, yellow slightly tinged with red; nutlets 2 or 3, narrowed and rounded at the ends, ridged

on the back, with a low broad slightly grooved ridge, 6.5–7 mm long, and 4–4.5 mm wide.

A shrub 3–4 m high, with stout stems, long slender erect or diverging branches, and slender nearly straight branchlets dark orange-green more or less tinged with red when they first appear, becoming light chestnut-brown, lustrous and marked by small pale lenticels in their first season and dark grayish brown the following year, and armed with slender straight or slightly curved bright chestnut-brown shining spines 2.5–3 cm long.

Clayton, Jefferson co., C. H. Peck (*3, type), June 14 and September 27, 1907.

COCCINEAE

Crataegus chateaugayensis n. sp.

Leaves ovate, acuminate or acute at the apex, concave-cuneate or rarely rounded at the entire base, finely often doubly serrate above with straight glandular teeth, and divided into 4–6 pairs of small acuminate spreading lateral lobes; deeply tinged with red when they unfold, about half grown when the flowers open in the first week of June, and then thin, yellow-green and roughened above by short white hairs and glabrous below, and at maturity dark yellow-green, smooth and slightly villose along the midribs on the upper surface, and paler and lustrous on the lower surface, 5.5–6.5 cm long, and 3.5–4 cm wide, with slender midribs rose colored in the autumn, and thin primary veins arching obliquely to the points of the lobes; petioles slender, slightly wing-margined at the apex, sparingly villose on the upper side while young, becoming glabrous, glandular, with numerous dark usually persistent glands, 2–3 cm in length. Flowers 1.6–1.8 cm in diameter, on long slender glabrous or occasionally slightly hairy pedicels, in compact mostly 10–12-flowered corymbs, the lower peduncles from the axils of upper leaves; calyx-tube narrowly obconic, glabrous, the lobes long, slender, acuminate and red at the apex, coarsely and conspicuously glandular dentate, reflexed after anthesis; stamens 5; filaments persistent on the ripe fruit; anthers dark rose color; styles 4 or 5, surrounded at the base by a narrow ring of pale tomentum. Fruit ripening the middle of September, on stout drooping red glabrous or occasionally slightly hairy pedicels, in few-fruited clusters, short-oblong to oval, scarlet, marked by large pale dots, slightly pruinose, 1.2–1.4 cm long, 8–10 mm in diameter; calyx prominent, with a short tube, a wide cavity tomentose in the bottom, and spreading and reflexed persistent lobes; flesh thick, firm light

yellow; nutlets 4 or 5, gradually narrowed and rounded at the base, thicker and rounded at the apex, ridged on the back, with a broad low deeply grooved ridge, 7–9 mm long, and 3.5–4 mm wide.

An arborescent shrub or tree 7–8 m high, with stout slightly zigzag glabrous branchlets, dark green and marked by pale lenticels when they first appear, becoming orange-brown or chestnut-brown in their first season and dull gray-brown the following year, and armed with very numerous stout straight or slightly curved light chestnut-brown shining spines 4–7 cm long.

Near Chateaugay lake, Franklin co., J. G. Jack (#1, type), September 15, 1903, June 8, 1905.

Crataegus spissa n. sp.

Leaves ovate, acuminate, gradually narrowed and concave-cuneate at the entire base, sharply doubly serrate above, with straight glandular teeth, and divided usually only above the middle into 4 or 5 pairs of small acuminate lobes; tinged with red and covered with long white hairs when they unfold, nearly half grown when the flowers open at the end of May and then thin, yellow-green and roughened above by short hairs and paler and glabrous below, and at maturity thin, dark yellow-green, smooth, glabrous and lustrous on the upper surface, pale yellow-green on the lower surface, 4–5 cm long and 3–4 cm wide, with slender yellow midribs, and thin primary veins arching obliquely to the points of the lobes; petioles slender, wing-margined at the apex, sparingly villose on the upper side while young, soon becoming glabrous, glandular with often persistent glands, 1.2–2 cm in length; leaves on vigorous shoots thicker, often rounded or truncate at the broad base, more coarsely serrate and more deeply lobed, 7–9 cm long and 7–8 cm wide, with broadly winged glandular petioles. Flowers 1.2–1.3 cm in diameter, on short glabrous or slightly hairy pedicels, in small very compact 5–10-flowered corymbs, the lower peduncles from the axils of upper leaves; calyx-tube narrowly obconic, glabrous, the lobes gradually narrowed from broad bases, acuminate, glandular dentate usually only above the middle, glabrous on the outer, villose on the inner surface, reflexed after anthesis; stamens 10; anthers pink or purplish red; styles 3 or 4, surrounded at the base by a narrow ring of pale tomentum. Fruit ripening the middle of September, on short drooping pedicels, in few-fruited clusters, subglobose to oval, scarlet, lustrous, marked by small pale dots; calyx little enlarged, with a wide shallow cavity, and small spreading serrate lobes, their tips

often deciduous from the ripe fruit; flesh thin, yellow, dry and mealy; nutlets 3 or 4, gradually narrowed and rounded at the ends, ridged on the back, with a long narrow ridge, 6–7 mm long, and 3.5–4 mm wide.

A shrub 3–4 m high, with numerous small stems, ascending or suberect branches, and slender slightly zigzag glabrous branchlets dark orange-green when they first appear, becoming bright chestnut-brown, lustrous and marked by pale lenticels in their first season and dull gray-brown the following year, and armed with numerous slender straight or slightly curved chestnut-brown shining spines 3.5–6 cm long.

Dry sandy or rocky soil, North Elba, Essex co., common and the prevailing species, C. H. Peck (✱41, type), May 27, June 2 and September 18, 1903, (✱41′) July 22 and September 18, 1904.

Crataegus verrucalis n. sp., Peck

Leaves ovate to slightly obovate, acuminate and long-pointed at the apex, gradually narrowed and cuneate at the base, finely often doubly serrate, with straight glandular teeth, and divided usually only about the middle into 4 or 5 pairs of slender acuminate spreading lobes; bronze-red and covered on the upper surface with short white hairs when they unfold, more than half grown when the flowers open at the end of May or early in June and then thin, yellow-green and still slightly hairy above and paler below, and at maturity thin, yellow-green on the lower surface, 4–4.5 cm long and 2.5–3 cm wide, with thin prominent midribs, and rather obscure primary veins; petioles slender, slightly wing-margined at the apex, glabrous, glandular, with often persistent glands, 1.5–2 cm in length; leaves on vigorous shoots broadly ovate to suborbicular, rounded at the base, more coarsely serrate and more deeply lobed. Flowers 1.2–1.4 cm in diameter, on short slender slightly villose pedicels, in small compact 4–10-flowered hairy corymbs, the lower peduncles from the axils of upper leaves; calyx-tube narrowly obconic, villose, the lobes slender, acuminate, glandular dentate, glabrous on the outer, sparingly villose on the inner surface, reflexed after anthesis; stamens 5–10; anthers red; styles 2–4, usually 3. Fruit ripening from the middle to the end of September and often persistent until after the leaves have fallen, on slender slightly hairy drooping, pedicels, in few-fruited clusters, subglobose to short-oblong, scarlet, lustrous, 1–1.2 cm long and 8–10 mm in diameter; calyx little enlarged, with a deep narrow cavity, and small

spreading often deciduous lobes; flesh thin, yellow; nutlets usually 3, acute at the base, thicker and rounded at the apex, ridged on the back, with a low doubly grooved ridge, 6.5–7 mm long, and 3.5–4 mm wide.

A shrub or small tree 2–4 m high, with a stem sometimes 5 dm in diameter and like the long slender mostly erect branches covered with dark brown verrucose bark, and slender glabrous branchlets yellow-green and marked by pale lenticels when they first appear, becoming light chestnut-brown and lustrous in their first season and dark red-brown the following year, and armed with numerous stout straight light chestnut-brown shining spines 3.5–4 cm long.

Adirondack region, common; C. H. Peck (# 1fc, type), June 18 and October 1, 1907.

Related to Crataegus praecoqua Sargent, Crataegus verrucalis may be distinguished from that species by its smaller leaves and flower clusters, fewer stamens and styles, by its smaller and late hanging fruit, and by the peculiar wartlike excrescences on the bark.

Crataegus harryi n. sp.

Glabrous with the exception of the hairs on the upper surface of the young leaves and on the calyx-lobes. Leaves obovate, gradually narrowed and acute or acuminate at the apex, concave cuneate at the entire base, or occasionally oval and acuminate at the ends, sharply doubly serrate, with straight glandular teeth, and divided above the middle into numerous short slender acuminate lobes; nearly fully grown when the flowers open the last of May and then very thin, dark yellow-green and covered above by soft white hairs and paler below, and at maturity thin, dull light yellow-green and scabrate on the upper surface and yellow-green and lustrous on the lower surface, 6–7 cm long and 4–4.5 cm wide, with slender yellow midribs and primary veins; petioles slender, slightly wing-margined at the apex, 1.5–3 cm in length; leaves on vigorous shoots thicker, deeply lobed, more coarsely serrate, and often 12–14 cm long and 8–9 cm wide. Flowers 1.3–1.5 cm in diameter, on slender pedicels, in wide mostly 7–15-flowered corymbs, the long lower peduncles from the axils of upper leaves; calyx-tube very narrow, obconic, the lobes long, slender, acuminate, minutely glandular dentate, glabrous on the outer, villose on the inner surface, reflexed after anthesis; stamens 5 or 6; anthers pink; styles 2–4. Fruit ripening and falling early in October, on slender reddish pedicels, in few-fruited spreading clusters, short-oblong to slightly obovate,

rounded at the ends, cherry-red, lustrous, marked by small pale dots, about 1 cm long and 8–9 mm in diameter; calyx prominent, with a wide deep cavity tomentose in the bottom, and long spreading and incurved persistent lobes; flesh thin, yellow-green, dry and mealy; nutlets 2–4, rounded at the base, gradually narrowed and acute at the apex, or when 4 acute at the ends, ridged on the back, with a high broad irregularly grooved ridge 7–7.5 mm long, and about 5 mm wide.

A slender tree sometimes 8 m high, with a short trunk occasionally 2 dm in diameter and covered with pale gray very scaly bark, small spreading dark gray branches spotted with lighter gray, and very slender nearly straight branchlets dark orange-brown and marked by pale lenticels when they first appear, becoming light yellow-brown and lustrous in their first season and dull light gray-brown the following year, and armed with occasional slender nearly straight or slightly curved light chestnut-brown spines 2.5–3 cm long.

Borders of woods in low bottom lands of Wet-stone brook near the Honeoye state road, Richmond, Ontario co., Henry T. Brown (#38, type), May 28 and October 17, 1906.

Both Brown and Henry having been used in forming specific names in Crataegus, Crataegus harryi, one of the most distinct and interesting of his discoveries will serve to commemorate the name of Henry T. Brown of Rochester, New York, who has carefully studied and collected the numerous thorns found by him near Hemlock and Honeoye lakes in Livingston and Ontario counties.

ANOMALAE

Crataegus simulans n. sp.

Leaves ovate to slightly obovate or oval, acuminate or rounded at the apex, gradually narrowed to the concave-cuneate entire base, sharply often doubly serrate above, with straight glandular teeth, and slightly divided usually only above the middle into 4 or 5 pairs of small acuminate spreading lobes; nearly fully grown when the flowers open in the last week of May and then thin, yellow-green and slightly roughened above by short white hairs and paler and glabrous below, and at maturity thin, dull yellow-green and scabrate on the upper surface, paler on the lower surface, 5–6 cm long and 2.5–5 cm wide, with thin light yellow midribs and primary veins; petioles slender, slightly wing-margined at the apex, sparingly villose on the upper side while young, soon becoming glabrous, often rose colored in the autumn at the base, 1.5–2.5 cm in length; leaves

on vigorous shoots somewhat larger, more deeply lobed and more coarsely serrate. Flowers 1.8–2 cm in diameter, on long slender slightly villose pedicels, in wide lax mostly 9–14-flowered corymbs, the elongated lower peduncles from the axils of upper leaves; calyx-tube narrowly obconic, the lobes abruptly narrowed at the base, long, slender, acuminate, minutely glandular dentate, glabrous on the outer, slightiy hairy on the inner surface, reflexed after anthesis; stamens 10; anthers light pink; styles 3 or 4, surrounded at the base by a few pale hairs. Fruit ripening early in October, on long slender reddish pedicels furnished with occasional hairs, in few-fruited clusters, short-oblong to slightly obovate, bright red, lustrous, marked by small pale dots, 8–10 mm long and 7–9 mm in diameter; calyx prominent, with a short tube, a broad shallow cavity narrowed and tomentose in the bottom, and elongated persistent lobes villose and bright red on the upper side; flesh thin, yellow-green, dry and mealy; nutlets 3 or 4, gradually narrowed and rounded, or when 4 acute at the ends, ridged on the back, with a broad high grooved ridge, more or less penetrated on the inner faces by long wide depressions, 6.5–7 mm long, and 4–4.5 mm wide.

A shrub 3–4 m high, with small stems covered with pale gray bark, spreading horizontal and drooping branches, and very slender nearly straight branchlets, light orange-green and marked by pale lenticels when they first appear, becoming light chestnut-brown and very lustrous in the first season and pale gray-green in their third year, and armed with slender nearly straight dark purple spines 4–5 cm long.

Near the road along the east side of Hemlock lake, Livingston co., Henry T. Brown (#11, type), May 28 and October 3, 1906.

This species has the foliage, habit and general appearance of a *Coccineae*. From that group it is excluded by the depressions on the inner faces of the nutlets which are sometimes as much developed as in some of the species of *Tomentosae*. On many of the nutlets these depressions are much less deep than on others, however, and as they show so much variation in this character it is perhaps best to place it among the *Anomalae*, which by the discovery of this species appears to be even more closely related than was before supposed; on one hand with the *Coccineae* and on the other with the *Tomentosae*.

Crataegus floridula n. sp.

Glabrous with the exception of the hairs on the young leaves and calyx lobes. Leaves ovate to oblong-ovate or oval, long-pointed

and acuminate at the apex, gradually narrowed and concave-cuneate at the entire base, finely doubly serrate above, with straight glandular teeth, and slightly and irregularly divided usually only above the middle into 3 or 4 pairs of small acute lobes; slightly tinged with red when they unfold, nearly fully grown when the flowers open the first week of June and then very thin, dark yellow-green and slightly hairy above especially along the midribs, and glabrous and glaucous below, and at maturity thin, dark bluish green, smooth and lustrous on the upper surface, pale blue-green on the lower surface, 5–7 cm long and 3–4.5 cm wide, with thin yellow midribs and primary veins; petioles very slender, slightly wing-margined at the apex, sparingly glandular, with mostly deciduous glands, often tinged with red in the autumn, 1.8–2.5 cm in length; leaves on vigorous shoots thicker, occasionally rounded at the base, more coarsely serrated, more deeply lobed, and often 7–8 cm long and 5.5–6.5 cm wide, with foliaceous lunate often persistent stipules. Flowers 1.2–1.3 cm in diameter, on long slender pedicels, in very narrow compact 4–8-flowered corymbs, the much elongated lower peduncles from the axils of upper leaves; calyx-tube narrowly obconic, the lobes long, slender, acuminate and rose colored at the apex, entire or furnished near the base with 1 or 2 glands, glabrous on the outer, slightly villose on the inner surface, reflexed after anthesis; stamens 5–8; anthers red or purple; styles 3 or 4. Fruit ripening late in September, on slender drooping pedicels, in loose clusters, short-oblong to somewhat obovate, slightly narrowed at the ends, crimson, lustrous, 1.1–1.2 mm long, and 7–8 mm in diameter; calyx little enlarged, with a deep narrow cavity, and reflexed and appressed lobes dark red on the upper side below the middle and often deciduous from the ripe fruit; flesh thin, greenish yellow; nutlets 3 or 4, usually 3, gradually narrowed and rounded at the ends, or when 3 broader at the apex than at the base, marked on the inner face by shallow irregular depressions, 6.5–7 mm long, and about 4 mm wide.

A shrub 2–3 m high, with gray stems, 2.5–5 cm in diameter near the ground, ascending branches, and slender slightly zigzag branchlets dark orange-green and marked by pale lenticels when they first appear, becoming bright chestnut-brown and lustrous in their first season and dull reddish brown the following year, and armed with stout slightly curved chestnut-brown shining spines 2.5–3 cm long.

Piseco, Hamilton co., C. H. Peck (#62, type), June 10 and September 16, 1904.

TOMENTOSAE

Crataegus efferata n. sp.

Leaves oblong-ovate to rhombic, acute or acuminate at the apex, abruptly or acutely concave-cuneate at the entire base, finely often doubly serrate above, with straight or incurved glandular teeth, and sometimes slightly divided above the middle into 3 or 4 pairs of small acute lobes; more than half grown when the flowers open the last days of May and then very thin, yellow-green and slightly hairy above on the midribs and covered below by soft pale hairs, and at maturity thin but firm in texture, light yellow-green, very smooth and glabrous on the upper surface, pale and villose-pubescent on the lower surface on the stout often rose colored midribs and slender primary veins and veinlets, 5.5–7.5 cm long and 4–6 cm wide; petioles stout, narrowly wing-margined often to the base, hairy on the upper side while young, becoming nearly glabrous and often dark rose color in the autumn, 1.5–1.8 cm in length; leaves on vigorous shoots thicker, more coarsely serrate, more deeply lobed, and often 7–8 cm long and 5–6 cm wide. Flowers about 1.2 cm in diameter, on long slender slightly villose pedicels, in small rather compact 10–15-flowered hairy corymbs, the lower peduncles from the axils of upper leaves; calyx-tube narrowly obconic, coated with short white hairs, the lobes abruptly narrowed at the base, long, wide, acuminate, laciniately glandular serrate, glabrous on the outer, slightly villose on the inner surface, reflexed after anthesis; stamens 16–20; anthers light rose color; styles 2 or 3. Fruit ripening early in October, on long slender slightly hairy red pedicels, in few-fruited spreading or drooping clusters, subglobose, scarlet, very lustrous, marked by large pale dots, 8–9 mm in diameter; calyx prominent, with a deep narrow cavity, and long spreading lobes dark red on the upper side below the middle; flesh thick, yellow-green, becoming soft and succulent when fully ripe; nutlets usually 2, nearly orbicular, rounded and slightly ridged on the back, penetrated on the inner face by long narrow deep cavities, 4.5–5 mm long, and 3–3.5 mm wide.

An arborescent shrub 5–7 m high, with stout stems covered with dark brown scaly bark, erect and spreading branches, and stout slightly zigzag glabrous branchlets light orange-yellow when they first appear, becoming dark chestnut-brown, very lustrous and marked by small pale dark lenticels in their first season and dull reddish brown the following year, and armed with numerous very

stout straight or slightly curved light chestnut-brown shining spines 4–5 cm long, compound and long persistent on old stems and branches.

Banks of the outlet of Hemlock lake at Hemlock railroad station, Livingston co., New York, Henry T. Brown (#6, type), May 28 and October 4, 1906.

Crataegus honeoyensis n. sp.

Leaves oval to ovate or slightly obovate, rounded or acute at the apex, gradually or abruptly narrowed and concave-cuneate at the entire base, sharply doubly serrate above, with straight or incurved glandular teeth, and sometimes slightly divided above the middle into 2 or 3 pairs of short broad acuminate lobes; nearly fully grown when the flowers open in the last week of May and then thin, yellow-green, smooth, lustrous and slightly hairy along the midribs above and pale bluish green and covered below with short soft hairs, and at maturity thick, reticulate-venulose, dull yellow-green, smooth and glabrous on the upper surface, pale and slightly hairy on the lower surface on the stout rose colored midribs, and slender primary veins extending very obliquely to the apex of the leaf, 6–8 cm long and 4–4.5 cm wide; petioles stout, narrowly wing-margined sometimes to the base, slightly hairy on the upper side, often rose color in the autumn, 1.5–2 cm in length; leaves on vigorous shoots rather thicker, ovate or oval, more coarsely serrate, more deeply lobed, and sometimes 8–10 cm long and 5–6 cm wide. Flowers about 1.5 cm in diameter, on long slender drooping villose pedicels, in narrow compact many-flowered corymbs, the long lower peduncles from the axils of upper leaves; calyx-tube narrowly obconic, covered with long scattered pale hairs, the lobes long, wide, acute, laciniately glandular serrate, villose, reflexed after anthesis; stamens 20; anthers pale pink, styles 2 or 3, surrounded at the base by a narrow ring of pale tomentum. Fruit ripening the end of September, on stout slightly hairy erect reddish pedicels, in few-fruited clusters, short-obiong or slightly ovate, scarlet, lustrous, marked by small pale dots, 8–10 mm in diameter; calyx prominent, with a broad deep cavity, and elongated spreading persistent lobes slightly hairy and dark red on the upper side; flesh thin, dry and yellow, becoming soft and succulent; nutlets 2 or 3, rounded at the ends, or when 3 acute at the base, ridged on the back, with a low broad slightly grooved ridge, penetrated on the inner faces by shallow cavities, 6–6.5 mm long, and 4–4.5 mm wide.

A narrow shrub 3–4 m high, with small ashy gray stems, ascending branches, and stout slightly zigzag glabrous branchlets light orange-green and marked by pale lenticels when they first appear, becoming light chestnut-brown and very lustrous in their first season and light reddish-brown the following year, and armed with stout straight purplish shining spines 3.5–4 cm long and pointing toward the apex of the branch.

Roadside west of Honeoye lake, Ontario co., New York, H. T. Brown (#35, type), May 28 and October 16, 1906.

REMARKS AND OBSERVATIONS

Aster paniculatus bellidiflorus (Willd.) Burg.

A form answering well to the description of this subspecies was found growing plentifully near the railroad station at Cairo, Greene co. in September.

Carya glabra odorata Sargent

Specimens were collected near Dykemans, Putnam co. June. The leaflets are generally five and the lowest pair are generally much smaller than the pair above them. The fruit is subglobose with a thin husk.

Castanea dentata Borkh.

Fruiting specimens of the remarkable tree near Freehold, Greene co. known as the "burless chestnut" were obtained in September. The fruit at that time was quite small, but the nuts show the exposed manner of their development. The tree is mentioned in Sargent's *Silva of North America*, volume IX, page 14, footnote.

Clitopilus caespitosus Pk.

This rather rare and singular mushroom, has appeared in several localities this season and has shown a wider range of variation than formerly. The pileus varies from 1–4 inches broad and the lamellae from slightly rounded behind or subsinuate to slightly decurrent. The mode of growth is not always strictly cespitose for occasionally single specimens are found. The color of the spores is very similar to that of the spores of Tricholoma personatum Fr., T. nudum (Bull.) and T. sordidum Fr. but in the colors of the plant it is more closely related to Clitopilus noveboracensis Pk. another species with very pale pink spores.

Clitopilus conissans Pk.

This species was described from inadequate material collected in a dry time and showing the specific characters imperfectly. Undue weight was given to the red color of the spores and the plant was thereby referred to a genus with which it has but little affinity. Specimens observed and collected this season indicate that its true relationship is with Psilocybe on account of the entire absence of a veil and its general habit. Its characters place it near P. spadicea, but the plants also have a striking similarity to Hypho-

loma hydrophilum, but from both, the species is separated by the color of the lamellae and spores. A new description follows.

Psilocybe conissans n. comb.

Clitopilus conissans N. Y. State Mus. Rep't 41:64; 42:45

Pileus fleshy but thin, broadly convex becoming nearly plane, glabrous, hygrophanous, pale chestnut or watery ferruginous and striatulate on the margin when moist, pale alutaceous or pale buff and sometimes slightly rugose when dry, flesh whitish; lamellae thin, close, rounded behind, adnexed or rarely adnate, bay verging to dark purple or liver color; stem equal, rather slender, firm, glabrous, hollow, curved or flexuous, white, veil none; spores virraceous, elliptic, .0003–.0004 of an inch long, .00016–.0002 broad, (8–10 μ long, 4–5 μ broad).

Cespitose on or about the base of deciduous trees. Catskill and Adirondack mountains, also at Gansevoort, Saratoga co. September and October. Cystidia occur sparingly on the lamellae.

Collybia lacunosa Pk.

In *New York State Museum Report* 26, page 51 this plant is described under the name Agaricus (Tricholoma) lacunosus. Its texture is too tough to permit its reference to the genus Tricholoma and it is here placed in the genus Collybia as a better place for it. It is a pretty little golden yellow mushroom inhabiting decaying wood. It is neither common nor plentiful.

Crataegus bissellii Sargent

A small shrub whose flowers have pale pink anthers soon fading to pale yellow or whitish was found near Staatsburg, Dutchess co. and referred to this species. A similar shrub but having flowers with bright red anthers occurs in North Greenbush, Rensselaer co. As the anthers of the flowers of C. bissellii are described as either pink or rose purple the North Greenbush shrub is also referred to this species.

Cypripedium arietinum R. Br.

Near Hague, Warren co. Mrs E. Watrous. This is a rare species in our State and it is becoming more scarce from year to year. It is therefore gratifying to add this new locality to those previously known. Mrs Watrous sends both flowering and fruiting specimens.

Erysimum cheiranthoides L.

A small form 6–10 inches tall with leaves scarcely more than one inch long was found growing about water holes in a pasture near Clayton, Jefferson co.

Geoglossum peckianum Cke.

Specimens of this rare species were found growing among hair cap mosses near Wading River, Suffolk co. August. A slender form of Geoglossum nigritum (Fr.) Cke. was found by S. H. Burnham growing among sphagnum in a marsh near Shushan.

Habenaria ciliaris (L.) R. Br.

This beautiful orchid still lingers near Karner in what appears formerly to have been a swamp hole. It was discovered there two years ago and was in fine flowering condition at that time, July 22. The past season it was in the same flowering condition August 18, illustrating strikingly the influence of the season in retarding the development of vegetation.

Hydnum septentrionale Fr.

The difference between the young plant and the mature one is very great, and to illustrate this difference a figure of each is given on plates 9 and 10 in *Icones Hymenomycetum*. A specimen of the young plant was found near Fine, St Lawrence co. growing on the trunk of a standing sugar maple. It corresponds beautifully with the Friesian figure.

Hypholoma sublateritium (Schaeff.) Fr.

This species has been unusually abundant the latter part of the season. It has, in those cases coming under my observation, shown a darker and more uniformly brownish red color of the cap than is shown in H. perplexum Pk. This, taken in connection with its stuffed stem, makes the separation of the two quite easy. Its flavor, however, is not always bitter, as is indicated by the descriptions of the European plant.

Morchella deliciosa Fr.

The name of the delicious morel implies that it is specially agreeable as an article of food. In confirmation of this I am pleased to

make the following quotation from a letter received concerning it. "On two successive days this month, May 1907, I have collected on my lawn in Patterson, N. J. a double handful of Morchella deliciosa, had them cooked and have eaten them with the result that they were quite as palatable as the common mushroom." Unfortunately the species is not very common and, like other morels, its time of occurrence is limited to a short period early in the season.

Polyporus volvatus Pk.

This singular species of polyporus inhabits the trunks of various coniferous trees. It emerges from holes made in the bark by insect borers. While young, the pores, from which the spores drop, are concealed by a thin prolongation of the exterior coat of the pileus, which forms a continuous membrane beneath them. In due time the central part of this membrane opens in a circular aperture and reveals the mouths of the pores and the heaps of pinkish spores that have fallen from them and lodged on the inner surface of the membrane about the aperture. Small insects are often found inside the wrapper and apparently feeding on the spores. In some specimens of the polyporus received early in the season small holes were observed in the wrapper and insects were found in the cavity dusted with and evidently feeding on the spores, for there was no evidence of their having eaten or bored into the substance of the fungus. The appearance indicated that the borers had eaten one or two holes through the wrapper before its aperture had been formed and that they had thereby gained entrance to the storehouse of spores on which they were feeding. In the examples in which the insects were found within specimens with no small apertures in the wrapper it is clear that they gained entrance through the larger natural aperture. It is possible that one purpose of the visit of the insects is to deposit eggs within the fungus, for this species of polyporus is one specially liable to be quickly destroyed by insect larvae developing within. Here appears to be a peculiar case of mutual benefit between insect and fungus. The insect bores holes through the bark of the tree. Through these holes the spores of the fungus have access to the sapwood of the tree and through them also the mycelium of the fungus finds an exit to the external light and air where it forms the fruiting body and develops its spores. These in turn furnish food and a place for propagation to insects.

Salix serissima (Bail.) Fern.

A fine clump of this late willow was found growing in a wet place by the roadside near Fulton Chain, Herkimer co. This is the third station known for it in the Adirondack region.

Sphaeronema pruinosum Pk.

On the trunk of the low June berry, Amelanchier spicata (Lam.) Dec. Arnold clearing near Fulton Chain. June. This rare fungus was published in *New York State Museum Report* 24, page 85. 1872. Apparently the same species was published under the same name by Berkeley and Curtis in Grevillea 2:177. 1874.

EDIBLE FUNGI

Lycoperdon subincarnatum Pk.

PINKISH PUFFBALL

PLATE 114, FIG. 1–6.

Gregarious or cespitose; peridium 6–12 lines broad, globose or subglobose, sessile, the surface covered with small close subpyramidal granular or spiny warts which in the mature plant fall, leaving minute pits in the surface of the inner peridium, pinkish brown; capillitium and spores olivaceous; spores globose, .00016–.0002 of an inch broad.

The pinkish puffball is found in woods, growing on decaying wood, stumps, and prostrate trunks of trees and may be found from July to September. It is peculiar to this country. It rarely exceeds one inch in diameter and except when growing in dense clusters it is quite regularly globose and either sessile or with a very short sterile base. It is easily distinguished by its dull pinkish brown color and sessile peridium while immature, and by the grayish minutely pitted inner peridium of the mature or old plants. It is well to remove the exterior peridium before cooking. The texture is a little tough and the flesh is not highly flavored, but when fried in butter it is agreeable to the taste, digestible and harmless. No puffball should be eaten after its flesh has lost its white color.

Lycoperdon gemmatum Batsch

STUDDED PUFFBALL

PLATE 114, FIG. 7–15

Scattered, gregarious or cespitose; peridium 10–20 lines broad, globose, depressed globose or obovate, obtuse or umbonate, generally

abruptly narrowed below into a more or less stemlike base, the surface covered with warts of unequal size, the larger ones solid, conic or pyramidal, bluntly pointed, early deciduous, intermingled with smaller granular and more persistent ones, where falling leaving small pale dotlike spots on the inner peridium, about which the smaller warts form rows of minute dots, white, whitish, grayish or brownish, the apex or umbo sometimes more highly colored than the rest, the old denuded peridium grayish, brownish or cinereous, often retaining the dotlike spots for a long time; capillitium and spores olivaceous; spores globose, .00016 of an inch broad.

The studded puffball grows on the ground and on decaying wood, in woods, groves and open places and may be found from June to October. It is a common and a very variable species. It is readily distinguished from all our other species by the peculiar character of its larger gemlike warts and the pale dots they leave on the inner peridium when they have fallen. The anastomosing rows of the smaller warts often give a reticulate appearance to the surface. The stemlike sterile base is sometimes cylindrical and nearly equal in diameter to the diameter of the peridium, sometimes it is much more narrow and again it may gradually taper downward. In some cases it is very short or wanting, in others it exceeds the peridium in length. In large specimens it may be coarsely pitted at the top or plicately grooved, the grooves often extending upward and forming plications on the base of the peridium. In some specimens both the grooves and pits occur. The larger warts are usually more numerous and conspicuous on the upper half of the peridium and are smaller and more scattered toward the base. Sometimes they are tipped with black or brown, and in some specimens they are more closely placed than in others.

The outer coat should be removed before cooking. In the raw state the taste is disagreeable, but cooking destroys this and makes a very palatable dish of this common puffball.

Clitocybe subcyathiformis n. sp.

SAUCER CLITOCYBE

PLATE 110, FIG. 1–6

Pileus fleshy but thin, broadly convex or nearly plane becoming centrally depressed, glabrous, hygrophanous, watery white when

moist and often obscurely striatulate on the thin soon spreading margin, white when dry, sometimes slightly colored in the center, flesh white, taste mild; lamellae thin, moderately close, adnate or slightly decurrent, white or whitish; stem equal or slightly tapering upward, stuffed, fibrillose-reticulate, whitish, often with a whitish mycelioid tomentum at the base; spores elliptic, .00024–.0003 of an inch long, .00016–.0002 broad.

The saucer clitocybe is gregarious and grows among fallen leaves under alders and white birches, and occurs late in the season. Its cap is 1–2 inches broad; its stem 1–1.5 inches long and 2–4 lines thick. It is generally white throughout. In the character of the stem the species is related to the cup shaped clitocybe, C. cyathiformis Fr., but in its white color, in its thin quickly expanding margin, and closer gills it is more closely related to C. dealbata Sow. The central depression of the cap is partly due to the elevation of the thin margin. The upper surface of the cap is therefore concave or saucer shaped and does not become funnel form. The margin is sometimes wavy or irregular. The small size and rarity of the species detracts from its importance as an edible species, but its agreeable flavor and harmless character make it worthy of a place in our list of edible species.

Collybia dryophila (Bull.) Fr.

OAK LOVING COLLYBIA

PLATE III, FIG. I–II

Pileus thin, convex or nearly plane, sometimes depressed in the center with the margin elevated and often wavy or irregular, glabrous, obtuse, variable in color, pale alutaceous, yellowish, dark tan or chestnut, flesh white; lamellae thin, close, narrow, rounded behind, slightly adnexed or nearly free, white or whitish, rarely tinged with yellow; stem equal, thickened toward the base or bulbous, glabrous, hollow, commonly colored like the pileus; spores elliptic, .00024–.0003 of an inch long, .00012–.00016 broad.

The oak loving collybia is one of our most common mushrooms. It occurs in woods, groves, open places and pastures and appears at any time from early spring to late autumn, when there is a sufficient degree of warmth and moisture. A favorite place of growth for it is among fallen pine leaves or under pine trees. It also grows on decaying wood. It may be solitary, gregarious or tufted. In dense tufts the caps are usually very irregular on account of mutual

pressure. They are 1–3 inches broad, the stem 1–3 inches long and 1–3 lines thick. The flesh is slightly tough but agreeable to the taste and perfectly harmless.

Russula pusilla Pk.

SMALL RUSSULA

PLATE 110, FIG. 7–14

Pileus very thin, convex or nearly plane, sometimes slightly or umbilicately depressed in the center, glabrous, even or slightly striate on the margin, red, often darker in the center, flesh white, taste mild; lamellae broad, moderately close, subventricose, adnate or slightly rounded behind, white becoming yellowish ochraceous or ochraceous buff with age or in drying; stem stout, solid or spongy within, soft, white; spores globose, slightly tinged with yellow, .0003 of an inch broad.

The small russula is not common but it sometimes occurs in considerable quantity and may be found from July to October. In the typical form the cap is less than an inch broad and the stem less than an inch long, but in specimens sent me by an esteemed correspondent and enthusiastic mycologist, Mr E. B. Sterling, the caps range from 3 lines to 2 inches broad, but the stem is in no case more than an inch long. The color of the caps is dark red or crimson, usually darker or brownish in the center. The coloring matter is soluble in water. If the plants are washed in water, the water becomes red, if stewed in milk without previous washing the milk becomes red, but this does not detract from the flavor and edibility of the mushroom. The pellicle of the pileus is separable and when wet, appears to be viscid, but in the growing condition of the mushroom the viscidity is not apparent. The plants grow on the bare soil or among short grass under pine trees. Mr Sterling writes concerning them that they have been very abundant between October 2 and October 11 and that on the afternoon of the latter date under two pine trees he collected for the table 120 specimens. He says "I consider them without doubt the best of the Russula family for eating. They taste good raw and when fried in butter, flavored and served hot, are delicious." Through his kindness I have had the opportunity of testing the edibility of this rare little mushroom and have no hesitation in placing it in the list of our excellent edible species.

Crepidotus malachius B. & C.

SOFT SKINNED CREPIDOTUS

PLATE 112, FIG. 1–4

Pileus fleshy, thin on the margin, thicker at the base, reniform, orbicular, cuneate or flabellate, convex or nearly plane, sometimes depressed behind, sessile or with a very short inconspicuous white tomentose stem, glabrous or slightly tomentose at the base, hygrophanous, watery white or grayish white and striatulate on the thin margin when moist, white when dry, flesh white; lamellae thin, close, rounded behind, white or whitish becoming brownish ferruginous; spores globose, .00025–0003 of an inch broad.

The soft-skinned crepidotus is a common species and grows on damp decaying wood in woods or shaded places. Much decayed prostrate mossy trunks of trees constitute a favorite habitat for it. It may be scattered, gregarious or imbricated in its mode of growth. It occurs from June to September. The cap is 1–2.5 inches broad and is sessile, or if it has a stem this is so short that the cap appears from above to be sessile. In wet weather or after rain it has a water soaked appearance and slight shadowy striations on the margin. As the moisture escapes, the cap becomes a clearer white and the striations disappear. The moisture disappears from the thickest part of the cap first, the thinnest part last. The species may be separated from our other white and closely allied forms by its more glabrous cap and globose spores.

Stropharia bilamellata Pk.

DOUBLE GILLED STROPHARIA

PLATE 112, FIG. 5–10

Pileus fleshy, convex, becoming nearly plane in large plants, even, obtuse, glabrous, whitish or yellowish, flesh white; lamellae thin, close, adnate, purplish brown in the mature plant; stem commonly short, solid, sometimes hollow in large plants, white, annulate, the annulus thick, white, with lamellae on the upper surface; spores elliptic, .0004–.0005 of an inch long, 0002–.0003 broad.

The double gilled stropharia is a rare species of which the first specimens received were collected in California. A second collection, of which samples were received, was made in Washington, D. C., and a third which enabled me to test its edibility was received

from Newark, Wayne co. where it was found growing in a cultivated field.

The species is well marked by the peculiar character of its collar. On the upper surface are miniature gills which radiate from the stem to the margin of the collar. These are narrow, white and uneven or dentate on the margin. They are sometimes stained by the spores, but these have probably fallen from the true gills above. In some instances the inner extremity of the false gills extends upward on the stem and appears to connect with the gills above. This peculiar character of the collar seems to be shown in Stropharia coronilla (Bull.) Fr. and forcibly suggests the thought that our plant is specifically the same as the European. The two correspond in several other characters and were there not several discrepancies between the American plant and the description of the European there could be no doubt of their specific unity. The following comparison shows the differences.

	AMERICAN	EUROPEAN
Pileus	white or yellowish	Tawny, ochraceous
Stem	solid or hollow, equal, or tapering upward	Stuffed, tapering downward
Collar	broad, white, gills on the upper surface	Narrow with radiating violaceous striae or upper surface sulcate plicate
Gills	without cystidia	With cystidia
Spores	10-12 μ x 6-8 μ	10 μ x 5 μ

On account of these differences it has seemed best to consider our plant distinct from the European, though it must be acknowledged that the similarity in the peculiar and unusual character of the gills almost outweighs the discrepancies between our plant and the descriptions of the European.

The cap is white or yellowish, glabrous, obtuse, the flesh is white and our plant, like the European, has a peculiar or radishlike odor. The mature gills are purplish brown with a white edge. The stem is commonly solid, but in large or old specimens it is sometimes clearly hollow. It is equal in diameter or tapering upward.

Boletus niveus Fr.

SNOWY BOLETUS

PLATE 113, FIG. 1–5

Pileus fleshy, convex, becoming broadly convex or nearly plane, glabrous, white or grayish white, flesh white; tubes nearly plane in

the mass, becoming convex with age, depressed around the stem, their mouths minute, whitish when young, becoming brownish with age; stems long, rather slender, equal or tapering upward, solid, scurfy or appressed scaly, grayish; spores oblong-fusiform, .0005–.0008 of an inch long, .0002–.00024 broad.

The snowy boletus is so closely related to the scabrous stemmed boletus that it is treated as a variety of it in *Hymenomycetes Europeae*. But it has recently been raised again to specific rank. It differs from the scabrous stemmed boletus not only in the color of its cap but also in its smaller tube mouths and in the character of its stem which lacks the fibrous black or reddish points which so distinctly mark B. scaber. Sometimes the whitish cap becomes tinged with green or bluish green, specially on the margin. The species is rare, having been observed and collected by the writer twice only, and both times in one locality. It occurs in August and is gregarious in its mode of growth. Its cap is 2–4 inches broad, its stem 3–5 inches long and 3–6 lines thick. Its edible qualities are similar to those of the scabrous stemmed boletus.

NEW YORK SPECIES OF PHOLIOTA

Pholiota Fr.

The genus Pholiota belongs to the series Ochrosporae which is characterized by spores of an ochraceous or subferruginous color. It is not in all cases sharply limited from allied genera because of the varying character of some of its species. It corresponds in structure to Armillaria in the white spored series and Stropharia in the brown spored series. In the group Phaeotae of the terrestrial species the spores are brown enough to cause some difficulty in deciding whether a given species should be placed in Pholiota or Stropharia. The variability in the development of the veil may also cause some perplexity. Species in which the veil is but slightly developed and very fugacious are liable to be referred to the genus Flammula or Naucoria. In Pholiota ornella Pk. the remains of the slight veil are so conspicuously adherent to the margin of the pileus as to suggest a reference to the genus Hypholoma unless the spore color is carefully noted. The prominent characters of the genus are:

Hymenophorum continuous with the stem; lamellae attached to the stem; stem annulate.

Some of the species grow on the ground, but the greater number grow on dead or decaying wood.

KEY TO THE SPECIES

Plants terrestrial 1
Plants lignatile 12
Plants growing on or among mosses.....minima
1 Spores ferruginous 2
1 Spores fuscoferruginous 5
2 Pileus 2 inches or more broad.....caperata
2 Pileus less than 2 inches broad..... 3
3 Pileus hygrophanous .....rugosa
3 Pileus not hygrophanous.....4
4 Pileus slightly striate on the margin.....filaris
4 Pileus even on the margin.....togularis
5 Pileus squamulose .....angustipes
5 Pileus glabrous 6
6 Pileus viscid when moist.....aggericola
6 Pileus not viscid.....7
7 Pileus subochraceous 8
7 Pileus not subochraceous.....9
8 Annulus persistent, lamellae very broad.....temnophylla
8 Annulus fugacious, lamellae narrow.....howeana
9 Stem solid .....johnsoniana
9 stem hollow 10
10 Pileus white, commonly rimose areolate.....vermiflua
10 Pileus not pure white, commonly even.....11
11 Spores more than .0003 of an inch long.....praecox
11 Spores less than .0003 of an inch long.....duroides
12 Pileus and stem squamose or squamulose.....13
12 Pileus alone squamose or squamulose.....18
12 Pileus neither squamose nor squamulose.....21
13 Pileus viscid when moist.....14
13 Pileus not viscid.....16
14 Pileus with red or purple hues when young.....ornella
14 Pileus with no red or purple hues.....15
15 Pileus brown or yellowish brown.....albocrenulata
15 Pileus bright yellow.....adiposa
15 Pileus lemon yellow.....limonella
15 Pileus whitish with dense tawny erect scales.....squarrosoides
16 Pileus more than 1 inch broad.....
16 Pileus not more than 1 inch broad.....erinaceella
17 Pileus with squarrose tawny scales.....squarrosa
17 Pileus with superficial pale yellow scales.....flammans
18 Pileus viscid when moist.....comosa
18 Pileus not viscid.....19
19 Annulus well developed, persistent.....spectabilis
19 Annulus slight, fugacious.....20
20 Stem hollow.....curvipes
20 Stem solid .....luteofolia
21 Pileus dry.....lutea
21 Pileus hygrophanous..... 22

22 Pileus more than 2 inches broad.....23
22 Pileus not more than 2 inches broad.....24
23 Pileus when dry cinnamon or ferruginous.....cerasina
23 Pileus when dry yellow.....acericola
24 Pileus viscid when moist.....discolor
24 Pileus not viscid.....25
25 Pileus yellow when dry.....autumnalis
25 Pileus tawny when dry.....confragosa
25 Pileus whitish or yellowish buff when dry.....marginella

TERRESTRIAL

Spores ferruginous

Pholiota minima Pk.

SMALLEST PHOLIOTA

Pileus membranous, hemispheric or campanulate, umbonate, glabrous, hygrophanous, brown and striatulate on the margin when moist, pale buff or yellowish white when dry; lamellae rather close subventricose, adnexed, ferruginous; stem slender, glabrous, solid, shining, similar to the pileus in color, annulus near the middle, slight, evanescent; spores elliptic, .0003 of an inch long, .0002 broad.

Pileus 2–4 lines broad; stem 8–12 lines long, .25 line thick.

Among hair cap mosses, Polytrichum. Catskill mountains. September. An extremely small species and a very rare one. It was discovered 20 years ago and has not been found since. It is separable from Pholiota mycenoides Fr. by its smaller size, paler color, umbonate pileus and solid stem. The umbonate pileus also separates it from P. pumila Fr.

Pholiota caperata (Pers.) Fr.

WRINKLED PHOLIOTA

State Mus. Rep't 54. p.182, pl.73, fig.1–5.

Pileus fleshy, firm, thin toward the margin, ovate becoming broadly campanulate or convex, obtuse, glabrous or often whitened in the center by whitish flocci or silky fibrils, generally more or less wrinkled, yellow, flesh white; lamellae moderately close, adnate, often uneven on the edge, whitish becoming ferruginous; stem equal, solid, stout, sometimes bulbous, glabrous or slightly floccose, white or whitish, the membranous annulus white, thick on the edge; spores subelliptic, .0005–.0006 of an inch long, .00025–.0003 broad.

Pileus 2–4 inches broad; stem 2–5 inches long, 5–10 lines thick.

Scattered or somewhat gregarious, in woods, mossy swamps and open places. July to October. Common. Edible.

This is a fine large pholiota easily recognized by its peculiar wrinkled pileus and the white pruinosity or floccose covering of the center of the pileus. Sometimes, however, specimens may occur in which neither the wrinkles nor the flocci are present. Occasionally there is the semblance of a volva at the base of the stem. The annulus is usually well developed, white and persistent.

Pholiota rugosa Pk.

RUGOSE PHOLIOTA

Pileus thin, broadly conic or campanulate becoming expanded and often umbonate, hygrophanous, yellowish red or ferruginous and striatulate on the margin when moist, pale yellow or buff and commonly rugose when dry; lamellae close, adnexed, minutely denticulate on the edge, yellowish white becoming ferruginous or brownish ferruginous, the interspaces venose; stem equal or slightly thickened toward the base, straight or flexuous, hollow, fibrillose or squamulose below the annulus, pruinose or mealy above, pallid, the annulus membranous, with radiating ridges or striations on the upper surface, white; spores .0004–.0005 of an inch long, .00024–.00028 broad.

Pileus 6–12 lines broad; stem 1–2 inches long, 1–2 lines thick.

Ground and among decaying chips. Adirondack region. September. The species is closely related to Pholiota togularis (Bull.) Fr. from which it is separated by the hygrophanous pileus, the adnexed lamellae and the peculiar striations of the annulus.

Pholiota filaris (Fr.) Pk.

THREAD STEM PHOLIOTA

Pileus submembranous, campanulate becoming broadly convex or nearly plane, obtuse, even, but slightly striate on the margin, ochraceous; lamellae thin, close, adnate, ventricose, yellow becoming pale ferruginous; stem filiform, flexuous, glabrous, pallid, the annulus well developed, distant, white; spores .0003 of an inch long, .0002 broad.

Pileus 4–6 lines broad; stem 1–2 inches long, scarcely half a line thick.

Woods and open places. Adirondack and Catskill mountains. August. This is closely related to the next following species, with which it was united as a variety by the illustrious Fries. It may be separated by its smaller size, and the slightly striate margin of the pileus.

Pholiota togularis (Bull.) Fr.

LITTLE CLOAK PHOLIOTA

Pileus thin, campanulate becoming nearly plane, orbicular, obtuse, glabrous, even, not striate on the margin, pale ochraceous; lamellae thin, close, adnate, ventricose, yellow becoming pale ferruginous; stem equal, hollow, slender, fibrillose, yellow at the top, brownish toward the base; spores .0003 of an inch long. 0002 broad.

Pileus 10–15 lines broad; stem 2–3 inches long, 1–2 lines thick.

Ground in woods. Adirondack mountains. August. This and the two preceding species may yet be found to be varieties of one very variable species. They are closely allied to each other but may be distinguished by the characters given.

Spores fusco-ferruginous

Pholiota angustipes Pk.

NARROW STEM PHOLIOTA

Pileus fleshy, hemispheric becoming convex or nearly plane, slightly viscid when moist, squamulose with minute dotlike appressed scales, brown or grayish brown becoming ochraceous brown or subalutaceous, flesh whitish, taste unpleasant; lamellae thin, close, sinuate, whitish or creamy yellow becoming tawny brown; stem equal or tapering downward, flexuous, stuffed or hollow, squamose, whitish or cinereous; spores naviculoid, .0003 of an inch long, .00016–.0002 broad.

Pileus 1–2.5 inches broad; stem 1.5–3 inches long, 2–3 lines thick.

Cespitose. In pastures, commonly near or around old stumps. Otsego and Albany counties. July to October.

This species is related to the European Pholiota terrigena Fr. and Pholiota punctulata Kalchb. but from both it differs in the darker color of the pileus and in its slight viscidity. By reason of its densely tufted mode of growth the caps are often closely crowded and irregular.

Pholiota aggericola Pk.

BROWN PHOLIOTA

Pileus fleshy, convex becoming nearly plane or slightly depressed in the center by the upcurving of the margin, glabrous, viscid when moist and slightly striatulate on the margin, brown or blackish brown, sometimes darker in the center; lamellae subdistant, sinuate, decurrent with a tooth, pallid or grayish becoming rusty brown; stem equal or slightly tapering upward, fibrous, solid, colored like or a little paler than the pileus, whitish above the membranous annulus; spores elliptic, .0004–.0005 of an inch long, .00024 broad.

Pileus 1–2 inches broad; stem 1.5–3 inches long, 2–4 lines thick.

Banks by roadsides and among fallen leaves in woods. Albany county and Adirondack mountains. July to October. The pileus sometimes fades to a rusty brown hue.

P. aggericola retirugis Pk. Pileus rugosely reticulated.

Pholiota indecens Pk. is probably not distinct from this species, it differing in its dry pileus. This possibly was due to its being collected in a dry time. It has been collected but once.

Pholiota temnophylla Pk.

CUT GILLED PHOLIOTA

Pileus fleshy, hemispheric becoming convex, smooth, ochraceous yellow; lamellae very broad, adnexed, obliquely truncate at the inner extremity, brownish ferruginous; stem equal, glabrous, hollow, white, the annulus well developed, membranous, white; spores brownish ferruginous, broadly elliptic, .0004–.0005 of an inch long, .0003–.00035 broad.

Pileus 1–2 inches broad; stem 2–4 inches long, 2–4 lines thick.

Grassy ground by roadsides. Rensselaer county. June.

In color this species resembles Naücoria semiorbicularis (Bull.) Fr. but its annulus at once separates it from that. It also approaches Pholiota praecox (Pers.) Fr. in some respects, but its large size and peculiar broad lamellae are distinguishing characters. It has been found but once.

Pholiota howeana Pk.

HOWE PHOLIOTA

Pileus convex becoming nearly plane, fragile, smooth, subumbonate, yellowish, sometimes darker in the center; lamellae thin, close, rounded behind, eroded on the edge, whitish becoming ferruginous brown; stem equal or slightly thickened at the base, glabrous, hollow, colored like the pileus; spores .0003–.0004 of an inch long, .0002–.00024 broad.

Pileus 1–3 inches broad; stem 2–4 inches long, 2–4 lines thick.

Ground in woods and bushy places. Adirondack mountains, Albany and Sullivan counties. June, July and August. This species was formerly referred doubtfully to the genus Stropharia, but it now seems better to put it in Pholiota.

Pholiota johnsoniana Pk.

JOHNSON PHOLIOTA

Pileus fleshy, soft, brittle, broadly convex or nearly plane, glabrous, thin on the margin and sometimes striatulate when moist, yellowish in the center, whitish on the margin, sometimes wholly yellowish, flesh white, flavor agreeable; lamellae thin, close, rounded behind, slightly adnexed, whitish becoming rusty brown; stem equal, glabrous, solid, slightly striate at the top, the annulus thick, white; spores brown with a slight ferruginous tint, .00024–.0003 of an inch long, .00016–.0002 broad.

Pileus 2–4 inches broad; stem 1.5–3 inches long, 3–5 lines thick.

Grassy ground in pastures. Not common. Albany and Essex counties. September.

The spores of this species have such a decidedly brown hue that the species was thought to belong to the genus Stropharia. But in a good light a slight rusty tint can be detected. It is therefore placed with the brownish ferruginous spored species of Pholiota.

Pholiota vermiflua Pk.

WORMY PHOLIOTA

State Mus. Bul. 75. p.32, pl.86, fig.12–20.

Pileus convex or nearly plane, glabrous or sometimes floccose on the margin, commonly rimose areolate, specially in the center, white,

sometimes slightly tinged with yellow, flesh white; lamellae close, adnexed, white becoming ferruginous brown, generally minutely eroded on the edge; stem equal, hollow, striate at the top, white, the white annulus more or less floccose on the lower surface, lacerated, often evanescent; spores .0005 of an inch long, .0003 broad.

Pileus 2–4 inches broad; stem 2–3 inches long, 3–5 lines thick.

Rich soil in grain fields, waste places and about manure heaps. Albany, Essex and Monroe counties. June, July and August. Edible.

From the early pholiota, to which it is related, it may be separated by its larger size, thicker flesh, stouter stem, whiter color and by the greater tendency of the surface of the pileus to crack into areas.

Pholiota praecox (Pers.) Fr.

EARLY PHOLIOTA

State Mus. Mem. 4. p.159, pl.57, fig.1–5.

Pileus convex or nearly plane, soft, glabrous, whitish, often tinged with yellow or tan color, flesh white; lamellae thin, close, adnexed, whitish becoming brownish or rusty brown; stem slender, equal, glabrous or slightly mealy when young, stuffed or hollow, whitish, the annulus white, entire, sometimes fugacious; spores .0004–.0005 of an inch long, .00024–.0003 broad.

Pileus 1–2 inches broad; stem 1.5–3 inches long, 2–2.5 lines thick.

Grassy ground, lawns, etc. Common. May to July. Edible.

Pholiota praecox minor (Batt.) Pileus scarcely more than 1 inch broad, its margin appendiculate with the remains of the veil, annulus generally wanting. Grassy places. State Mus. Mem. 4, p. 160, pl.57, fig. 6–8.

Pholiota praecox sylvestris Pk. Pileus convex, glabrous, whitish, brown or rusty brown in the center. In thin woods. State Mus. Mem. 4, p. 160, pl. 57, fig. 9–11.

Pholiota duroides n. sp.

HARDISH PHOLIOTA

Pileus thin, convex becoming nearly plane, glabrous or slightly rimose squamose in the center, varying in color from creamy white to ochraceous buff either wholly or in the center only, flesh white, taste mild; lamellae thin, close, narrow, adnexed, sometimes broadly

sinuate and having a decurrent tooth, whitish becoming brown or rusty brown; stem equal or nearly so, stuffed or hollow, glabrous, whitish, the annulus thick and cottony, often lacerated and evanescent, white; spores broadly elliptic, .00024–.00028 of an inch long, .00016–.0002 broad.

Pileus 1–2 inches broad; stem 1–2 inches long, 2–4 lines thick.

Rocky ground near Syracuse. August and September. G. E. Morris, who has found it both in the locality given and in Massachusetts.

It is similar to Pholiota dura (Bolt.) Fr. but may be separated from it by its different colors, softer substance and specially by its smaller spores. These are more brown than the spores of Pholiota praecox Pers. and make it doubtful whether the species would not better be placed in the genus Stropharia.

LIGNATILES

Pileus viscid or dry, not hygrophanous

Pholiota albocrenulata Pk.

CRENULATE PHOLIOTA

Pileus fleshy, firm, convex or campanulate, obtuse or umbonate, viscid, squamose, yellowish brown, the scales brown or blackish, floccose, easily separable; lamellae broad, subdistant, sinuate, white crenulate on the edge, grayish becoming ferruginous; stem firm, equal or slightly tapering upward, stuffed or hollow, squamose, pallid or brownish below the slight fugacious annulus, white and furfuraceous above; spores subelliptic, pointed at the ends, .0004–.0005 of an inch long, .00024–.0003 broad.

Pileus 1–3 inches broad; stem 2–4 inches long, 2–5 lines thick.

Base of trees or on prostrate trunks and decaying wood, specially of sugar maple, Acer saccharum L. Essex and Otsego counties. July and August.

This species is rare and somewhat variable. It is never abundant and often solitary in its mode of growth. The scales of the pileus sometimes disappear leaving the surface of the cap mottled with brown spots. Under a lens the edge of the lamellae appear as if beaded with minute white globules. The margin of the pileus is sometimes adorned by the adhering fragments of the veil.

Pholiota adiposa Fr.

FAT PHOLIOTA

State Mus. Mem. 4. p. 160, pl. 57, fig. 12–17.

Pileus fleshy, firm, hemispheric or broadly conic becoming convex, viscid or glutinous, squamose, yellow, flesh whitish; lamellae close, adnate, yellow or yellowish becoming ferruginous; stem equal or slightly thickened at the base, solid or stuffed, squamose, yellow or sometimes reddish or tawny toward the base, the annulus slight, floccose, fugacious; spores elliptic, .0003 of an inch long, .0002 broad.

Pileus 1–4 inches broad; stem 2–4 inches long, 3–6 lines thick.

Single or cespitose. Stumps and dead trunks of trees in or near woods. Not rare. September to November. Edible.

The scales of the pileus are easily separable and sometimes disappear with age. They are generally more highly colored than the pileus. The annulus is often absent in mature specimens and by no means conspicuous in young ones.

Pholiota limonella Pk.

LEMON COLORED PHOLIOTA

Pileus thin, convex or nearly plane, sometimes umbonate, viscid, squamose, lemon yellow; lamellae narrow, close, rounded behind, adnexed, whitish becoming ferruginous; stem equal, solid, squamose with recurved scales, smooth above the lacerated annulus, colored like or a little paler than the pileus; spores elliptic, .0003–.00035 of an inch long, .0002–.00024 broad.

Pileus 1–2 inches broad; stem 1.5–2.5 inches long, 2–3 lines thick.

Cespitose. Prostrate trunks of beech, Fagus americana Sweet, in woods. Delaware county. September. This is a very beautiful species of pholiota, but it is as rare as it is beautiful. It has been found but once. It is easily distinguished from its allies by its bright lemon yellow color.

Pholiota squarrosoides Pk.

SHARP SCALE PHOLIOTA

State Mus. Mem. 54. p. 183, pl. 73, fig. 6–15.

Pileus fleshy, firm, subglobose when young, then convex, viscid, squamose, the scales terete, erect, pointed, tawny, densely crowded in the center, scattered toward the margin, there revealing the whitish

color of the pileus, flesh white; lamellae close, sinuate, whitish becoming brownish ferruginous; stem equal, firm, solid or stuffed, rough with numerous recurved tawny scales below the floccose or lacerated annulus, smooth and white above; spores elliptic, .0002 of an inch long, .00016 broad.

Pileus 1–4 inches broad; stem 2–4 inches long, 3–5 lines thick.

Single or cespitose. Old stumps and prostrate trunks of deciduous trees. Edible. Of excellent flavor.

P. squarrosoides faginea Pk. Plant smaller than in the type and scales more scattered. On dead trunks of beech, Fagus americana Sweet.

The sharp scale pholiota may be distinguished from Pholiota squarrosa Müll. by its viscid pileus, its compact, erect, pointed scales, its sinuate lamellae and its smaller brownish ferruginous spores.

Pholiota ornella Pk.

ORNATE PHOLIOTA

Agaricus (Hypholoma) ornellus Pk. State Mus. Rep't 34. p. 42.
Pholiota appendiculata Pk. State Mus. Bul. 94. p.33. pl. P, fig.8–17.

Pileus fleshy, firm, convex or nearly plane, viscid when moist, shining, squamose with appressed spotlike scales, appendiculate with fragments of the veil, dark red when young, soon fading to pink, finally becoming yellowish brown or grayish brown, flesh at first purplish red, specially in the lower part, whitish or pale yellow when mature; lamellae thin, close, rounded behind, adnexed or decurrent with a tooth, pale yellow or almost white becoming brownish ferruginous; stem short, firm, solid or with a small cavity, white above, brownish and squamose below the slight fugacious annulus, white within, the veil white or pale yellow, at first concealing the young lamellae, soon breaking into fragments and adhering partly to the margin of the pileus and partly to the stem; spores .00024–.0003 of an inch long, 00016–.0002 broad.

Pileus 1–3 inches broad; stem 1–1.5 inches long, 2–4 lines thick.

Single or in tufts. Decaying wood and sawdust. Adirondack region, Saratoga and Tompkins counties. July to October.

This is a rare species with us and a very perplexing one. The annulus in its best development consists of a mere circle of scales around the upper part of the stem. The greater part of the veil usually adheres to the margin of the pileus. The species has some characters suggestive of Flammula polychroa Berk. from which, however, it may be separated by its squamose pileus

without any umbo, its more fully developed and white or yellowish veil and its differently colored and adnexed lamellae. From the appendiculate margin it was referred to the genus Hypholoma. Specimens collected later and having a better developed annulus were described as a Pholiota. The viscid pileus with its spotlike scales and appendiculate margin and red, pink or purplish hues, fading with age to grayish brown or yellow brown, are characteristic of the species.

Pholiota erinaceëlla Pk.

BRISTLY PHOLIOTA

Agaricus detersibilis Pk. State Mus. Rep't 28. Bot. ed. p. 49.

Pileus thin, hemispheric or convex, dry, densely coated with small erect separable pyramidal or spinelike scales, tawny brown; lamellae broad, close, adnexed, pallid becoming cinnamon brown; stem equal, stuffed or hollow, densely squamulose below the slight annulus, often curved, colored like the pileus; spores naviculoid, .0003–.00035 of an inch long, .00016–.0002 broad.

Pileus 6–12 lines broad; stem 6–12 lines long, 1 line thick.

Dead and decaying trunks of deciduous trees in woods. Adirondack mountains, Scoharie and Oneida counties. June to September.

The small soft crowded scales of the pileus, which are easily rubbed away, constitute a prominent character of this species. The annulus is little more than the abrupt termination of the scaly coating of the stem. The name under which the species was first described was found to be preoccupied. This made it necessary to give it another name, and the one here given was chosen.

Pholiota squarrosa Müll.

SCALY PHOLIOTA

Pileus fleshy, firm, broadly conic becoming convex or nearly plane, dry, covered wih tawny squarrose scales, yellowish or yellowish brown; lamellae narrow, close, adnate or slightly decurrent, pallid becoming ferruginous; stem equal or nearly so, often flexuous, solid or stuffed, adorned with recurved scales, pallid or tawny brown; spores .0003 of an inch long, .00016 broad.

Pileus 1–3 inches broad; stem 3–5 inches long, 3–5 lines thick.

Prostrate trunks of trees in woods. Adirondack mountains and Rensselaer county. August.

A variable and showy species growing chiefly in dense tufts. The scales of the pileus give it a very rough appearance, specially in the young plant.

Pholiota flammans Fr.

YELLOW SCALE PHOLIOTA

Pileus fleshy, thin, convex becoming nearly plane, dry, sometimes umbonate, yellow or tawny yellow, adorned with paler yellow superficial scales, flesh yellowish; lamellae thin, close, rounded behind, adnexed, yellow becoming ferruginous; stem equal, straight or flexuous, squamulose, stuffed or hollow, yellow; spores minute, elliptic .00016–.0002 of an inch long, .00012–.00015 broad.

Pileus 1–2 inches broad; stem 2–3 inches long, 2–3 lines thick.

Decaying wood and prostrate trunks of trees in woods. Adirondack mountains. August and September.

The yellow scale pholiota is one of our most beautiful species. Its deep yellow or tawny pileus adorned with the paler sulfur colored delicate scales is an attractive sight. The plants grow singly or in tufts.

Pholiota comosa Fr.

HAIRY PHOLIOTA

Pileus fleshy, firm, convex, obtuse, viscid, squamose with hairy or floccose superficial separable white scales, tawny, flesh compact, white; lamellae broad, slightly decurrent, white becoming brownish clay color; stem somewhat bulbous at first, becoming elongated with age, often curved, solid, fibrillose, whitish, the annulus floccose, soon disappearing; spores brownish ferruginous, elliptic, .0003–.0004 of an inch long, .0002–.00024 broad.

Pileus 3–4 inches broad; stem 2–4 inches long, 6–12 lines thick.

Decaying wood of deciduous trees. Monroe county.

The hairy pholiota is a rare species in our State. The locality given is the only one in which the species has been found in our limits. It is doubtful if the variety alba Pk. [*State Mus. Rep't* 38, p. 86] belongs to it. It neither agrees in color nor in the size of the spores with the typical form. The specimen from Pittsford, Monroe co. is paler than the European plant but in other respects it shows the specific characters. The bulbous base of the stem is a prominent and peculiar character, tapering gradually into the stem above and having an abrupt short radicating point below.

Pholiota spectabilis Fr.

ORANGE PHOLIOTA. SHOWY PHOLIOTA

Pileus fleshy, compact, convex becoming nearly plane, dry, the cuticle rupturing and forming silky or fibrillose scales, yellow or tawny orange, flesh pale yellow, taste bitter; lamellae close, narrow, adnate or slightly decurrent, yellow becoming ferruginous; stem ventricose or slightly thickened downward, solid, slightly radicating, peronate, mealy above the annulus, fibrillose toward the base; spores elliptic, .0008–.0009 of an inch long, .0002–.00024 broad.

Pileus 2–4 inches broad; stem 2–4 inches long, 6–10 lines thick.

Single or cespitose. Decaying wood and stumps. Queens county. Very rare.

Pholiota curvipes Fr.

CURVE STEM PHOLIOTA

Pileus fleshy but thin, convex becoming nearly plane, obtuse, dry squamulose with minute appressed floccose scales, tawny yellow; lamellae thin, close, adnate, yellow becoming tawny; stem equal or rarely thickened at the base, slender, commonly curved, stuffed or hollow, fibrillose with a slight radiately floccose annulus, yellow; spores naviculoid, .0003–.0004 of an inch long, .0002–.00024 broad.

Pileus 10–18 lines broad; stem about 1 inch long, 1–2 lines thick.

Decaying wood. Adirondack region and Oneida county. July to September.

Our specimens vary in the color of the stem, it being in some cases ferruginous toward the base. The spores also are a little larger than the dimensions given in *Syiloge*, but the general agreement with the characters of the species is so good that it does not seem best to separate our plant.

Pholiota luteofolia Pk.

YELLOW GILLED PHOLIOTA

Pileus fleshy, firm, convex, dry, squamulose, fibrillose on the margin, pale red or yellowish; lamellae broad, subdistant, sinuate, serrate on the edge, yellow becoming bright ferruginous; stem firm, fibrillose, solid, often curved from its place of growth, annulus slight, fugacious; spores bright ferruginous, .00028 of an inch long, .00016 broad.

Pileus 1–2 inches broad; stem 1–2.5 inches long, 3–5 lines thick.

Subcespitose. Dead trunks of birch trees, Betula lutea Mx. Sullivan county. September. The reddish color of the pileus often fades with age. The species is rare and has not been collected recently. In some of its characters it shows a close relationship to Pholiota tuberculosa Fr. from which it may be separated by the absence of a bulbous base to the stem.

Pholiota lutea Pk.

YELLOW PHOLIOTA

Pileus fleshy, firm, convex, dry, slightly silky and sometimes minutely floccose squamulose in the center, buff yellow, often a little darker in the center, the thin incurved margin slightly surpassing the lamellae, flesh pale yellow, odor pleasant, taste bitter; lamellae thin, close, rounded behind, adnexed, pale yellow becoming dark ferruginous; stem firm, solid, thickened at the base, fibrillose, colored like the pileus, the annulus superior, slight, fugacious; spores ferruginous, .0003 of an inch long, .0002 broad.

Pileus 2–4 inches broad; stem 2–3 inches long, 3–5 lines thick.

Decaying wood and trunks of trees in woods. Essex county. August.

Pileus hygrophanous

Pholiota cerasina Pk.

CHERRY PHOLIOTA

Pileus fleshy, firm, broadly convex, glabrous, hygrophanous, cinnamon color when moist, yellow when dry, odor amygdaline, flesh yellow; lamellae close, sinuate, yellow becoming cinnamon or ferruginous; stem equal, solid, sometimes curved, furfuraceous above the annulus, which is slight and fugacious; spores elliptic, minutely rough, .0003 of an inch long, .0002 broad.

Pileus 2–4 inches broad; stem 3–4 inches long, 2–4 lines thick.

Commonly cespitose. Old prostrate trunks of trees in woods. Cayuga county. August.

A rare species. The amygdaline or cherry odor suggests the specific name.

Pholiota acericola Pk.

MAPLE PHOLIOTA

Pileus fleshy but thin, broadly convex or nearly plane, glabrous, often rugosely reticulate or corrugated, hygrophanous, yellow or

sometimes smoky yellow with the center or umbo brownish; lamellae close, sinuate, commonly longitudinally wrinkled when dry, grayish becoming brownish ferruginous; stem equal or thickened at the base, hollow, fibrillose striate, white or whitish with a large membranous, persistent, deflexed, white annulus; spores elliptic, .00035 of an inch long, .00024 broad.

Pileus 1–3 inches broad; stem 2–4 inches long, 3–5 lines thick.

Mossy trunks of maple trees in woods. Essex, Lewis, Otsego and Schoharie counties. July to September.

This species may be easily recognized by its well developed annulus, its rugosely reticulate or pitted pileus and the rugosely wrinkled lamellae of the dried plant. The reticulations of the surface of the pileus usually disappear in drying. When growing in much decayed wood white strings of mycelium develop in the wood.

Pholiota discolor Pk.

FADING PHOLIOTA

Pileus thin, convex becoming nearly plane or slightly depressed, glabrous, viscid, hygrophanous, cinnamon rufous and striatulate on the margin when moist, bright ochraceous yellow when dry; lamellae narrow, close, pallid or whitish becoming ferruginous; stem equal, hollow, fibrillose, whitish or pallid, sometimes with a white mycelioid tomentum at the base, the annulus distinct, persistent; spores elliptic, .0003 of an inch long, .0002 broad.

Pileus 8–16 lines broad; stem 1.5–3 inches long, about 1 line thick.

Single or cespitose. Decaying wood and prostrate trunks of trees in woods. Not rare. July to October.

The change of color from the moist to the dry state is well marked. The color of the pileus is similar to that of the next following species but the viscid pileus separates it. Pholiota discolor caespitosa Pk. is a mere form, unworthy of being considered a variety.

Pholiota autumnalis Pk.

Caution

AUTUMN PHOLIOTA

Agaricus (Naucoria) autumnalis Pk. State Cab. Rep't 23 p. 92.

Pileus fleshy but thin, convex, hygrophanous, cinnamon rufous and striatulate on the margin when moist, dingy yellow when dry;

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lamellae thin, close, slightly sinuate, adnate or slightly decurrent, yellowish becoming subferruginous; stem slender, equal, hollow, fibrillose, colored like but paler than the pileus or sometimes brownish toward the base; spores .0003–.0004 of an inch long, .0002–.00024 broad.

Pileus 6–16 lines broad; stem 1–2 inches long, 1–2 lines thick.

Single or cespitose. Decaying wood in woods. Albany, Rensselaer and Essex counties. September to November. The annulus is sometimes but slightly developed, and such specimens are liable to be mistakenly referred to the genus Naucoria.

Pholiota confragosa Fr.

ROUGH PHOLIOTA

Pileus fleshy but thin; convex becoming nearly plane, fragile, obtuse, floccose squamulose becoming naked, hygrophanous, cinnamon rufous and striate on the margin when moist, tawny when dry; lamellae thin, close, adnate, very narrow, rufous; stem equal, hollow, fibrillose below the spreading membranous annulus, striate above, pallid or pale ferruginous; spores .00028–.0003 of an inch long, .0002–.00024 broad.

Pileus 1–2 inches broad; stem 1–2.5 inches long, 2–3 lines thick.

Single or cespitose. Decaying wood and prostrate mossy trunks in woods. Adirondack mountains. September.

The scales of the pileus are generally so minute that they are easily overlooked. The whole plant is nearly of one color. It is quite fragile and should be handled carefully. The dimensions of the spores are taken from the American plant, as the publications of the European authors do not agree in respect to this character.

Pholiota marginella Pk.

SLIGHTLY MARGINED PHOLIOTA

Pileus fleshy, convex becoming nearly plane, glabrous, hygrophanous, yellowish red or subferruginous and usually striatulate on the margin when young or moist, whitish or yellowish buff when dry, the young margin slightly silky with whitish fibrils; lamellae thin, close, adnexed, minutely eroded on the edge, whitish becoming dark ferruginous; stem equal or nearly so, flexuous, fibrillose below the slight fugacious annulus, mealy or pruinose above, stuffed or hollow, whitish or pallid, sometimes with a white mycelioid tomentum at

the base; spores elliptic, .00024–.0003 of an inch long, .00016–.0002 broad.

Pileus 1–2 inches broad; stem 2–4 inches long, 2–4 lines thick.

Single or cespitose. Decaying wood. Essex county. June. Found but once. The species is apparently related to Pholiota marginata (Batsch) from which it may be distinguished by its even fibrillose margin, adnexed lamellae and paler uniformly colored stem. In drying, the moisture, as usual in hygrophanous species, first disappears from the center of the pileus.

LATIN DESCRIPTIONS OF NEW SPECIES OF PLANTS

Crataegus verrucalis

Frutex vel arbor parva, 2–4 m alta, trunci diametro 2.5–5 cm; ramis longis, tenuibus, divergentibus, erectisve, trunci ramorumque magnorum cortice verrucoso, spinis leviter curvatis rectisve, castaneis, nitidis, 2.5–4 cm long.

Folia ovata vel subovata, acuta acuminatave, basi rotundata vel cuneata, pullulantia tincta fusco-rubro et superiore pubescentia, matura flava-viridia, nitida, glabra, 4–4.5 cm long. 2.5–3 cm lat., in ramis robustis late ovata vel suborbiculata, basi rotundata.

Flores 4–10 in quoque corymbo, 1.2–1.4 cm lat. pediculis leviter villosis, calycis lobis extus glabris, intus hirtellis, staminibus 5–10, antheris rubris, stylis 2–4, plerumque 3.

Poma subglobosa ovaliave, 1–1.2 cm long. 8–10 mm lat., vivida rubra, persistentiora, seminibus plerumque 3, 6.5–7 mm long. 3.5–4 lat.

In locis montanis.

Clitocybe subcyathiformis

Pileo carnoso, tenui, late convexo, demum subplano vel centro depresso, glabro, hygrophano, madido albido striatulatoque margine, sicco albo vel centro leviter flavido, carne alba, sapore miti; lamellis tenuibus, subconfertis, adnato-decurrentibus, albidis; stipite subaequale, farcto, fibrilloso-reticulato, albido, saepe basi albo tomentoso; sporis ellipsoideis, 6–8 x 4–5 μ.

Pileus 2.5–5 cm lat.; stipes 2.5–4 cm long., 4–8 mm. lat.

In locis humidis sub alnis betulisque.

Hygrophorus coloratus

Pileo carnoso, convexo subplanove, saepe umbonato, levi, viscoso, luteo, aurantiaco vel cinnabarino, carne alba, sub pellicula flava; lamellis inaequalibus, distantibus, arcuatis, adnato-decurrentibus, albis flavescentibusve; stipite aequale, subinde deorsum incrassato, glutinoso, farcto cavove, albo vel leviter flavo, in juventute subinde velo floccoso ad apicem; sporis 8–10 x 5–6 μ.

Pileus 2.5–6.5 cm lat.; stipes 5–7.5 cm long., 4–8 mm lat.

In locis humidis sub arboribus laricinis abietinisque.

Clitopilus subplanus

Pileo tenui, late convexo, demum subplano, centro leviter depresso aut distincte umbilicato, glabro, albido, carne alba; lamellis tenuibus, confertis, adnato-decurrentibus, sordide incarnatis; stipite tenui, glabro, tereti compressove, farcto, demum cavo, albido; sporis incarnatis, angulosis, uninucleatis, 10–12 x 6–8 μ.

Pileus 2.5–4 cm lat.; stipes 2.5–4 cm long., 2–4 mm lat.

Inter folia putrescentia in silvis.

Nolanea suaveolens

Pileo submembrano, convexo, umbilicato, obscure fibrilloso impolitove, margine indistincte striato, fumoso; lamellis tenuibus, inaequalibus, confertis, adnatis, albidis, demum sordide rosaceis; stipite tenue, glabro, cavo, fusco; sporis angulosis, uninucleatis, 10–12 x 6–8 μ.

Pileus 1.5–4 cm lat.; stipes 3–5 cm long., 1 mm lat.

In silvis. Specimina exsiccata odorem gratum, Lactarii glyciosmi et L. camphorati illum simulantem emittunt.

Pholiota duroides

Pileo tenui, convexo, demum subplano, glabro, subinde centro leviter rimoso-squamoso, ex albo ochraceoluteo; carne alba, sapore miti; lamellis tenuibus, confertis, angustis, adnexis, subinde late sinuatis et dente decurrentibus, albidis, demum fusco-ferrugineis; stipite aequale, farcto cavove, glabro, albido, annulo crasso, lanuginoso, saepe lacerato evanescenteque, albo; sporis late ellipticis, 6–8 x 4–5 μ.

Pileus 2.5–5 cm lat.; stipes 2.5–5 cm long., 4–8 mm lat.

In silvis. E Pholiota dura (Bolt.) Fr. in colore, carne molliore sporisque minoribus differit. Inter Pholiotam et Stropharian ambigua.

Flammula pulchrifolia

Pileo carneo, tenui, hemisphaerico, deinde convexo, viscidulo, hygrophano, fibrilloso, subinde centro squamuloso, margine fibrilloso, rosaceo, subinde pallido; carne alba, amara; lamellis tenuibus, confertis, adnatis, subinde leviter sinuatis, albidis, mox nitide luteis vel fulvo-ochraceis; stipite aequale, farcto cavove, pallido, saepe basi flavo, apice fibrilloso e velo; sporis in strato tenui fulvo-ochraceis, in strato crasso ochraceo-luteis, 7.5–8 x 5–6 μ.

Pileus 2.5–5 cm lat.; stipes 2.5–4 cm long., 3–4 mm lat.

Ad lignum Tsugae canadensis Carr.

Clavaria ornatipes

Gregaria, 2.5–5 cm alta, sparse ramosa; stipite gracile, hirsuto, fusco; ramulis paucis, irregularibus, teretibus, albidis griseis vel cinereis, acutis obtusisve; sporis late ellipticis vel subglobosis, 8–11 x 6–8 μ.

Inter muscos in locis humidis silvarum.

Clavaria trichopus Pers. *New York State Museum Report* 24, page 82. Noster fungus est distinctus in colore, habitate paucitateque ramorum.

Myxosporium necans

Acervuli in lineis longis sub epidermide nidulantes, erumpentes, intus albidi; conidiis oblongo-ellipticis in massas albas cirrosve flavido-albos expulsis, saepe binucleatis, 6–10 x 2–3 μ.

In cortice Pruni virginianae L. vivae. Fungus fruticem mox necat.

EXPLANATION OF PLATES

PLATE 110

Clitocybe subcyathiformis Pk.

SAUCER CLITOCYBE

1 Immature plant with moist pileus
2 Immature plant with dry pileus
3 Mature plant with center of pileus slightly colored
4 Two mature plants united at the base
5 Vertical section of the upper part of a mature plant
6 Four spores, x 400

Russula pusilla Pk.

SMALL RUSSULA

7, 8 Two immature plants showing the upper surface of the pileus
9, 10 Two larger immature plants showing color of the lamellae
11 Large mature plant showing color of the lamellae
12 Vertical section of an immature plant
13 Vertical section of a mature plant
14 Four spores, x 400

EDIBLE FUNGI

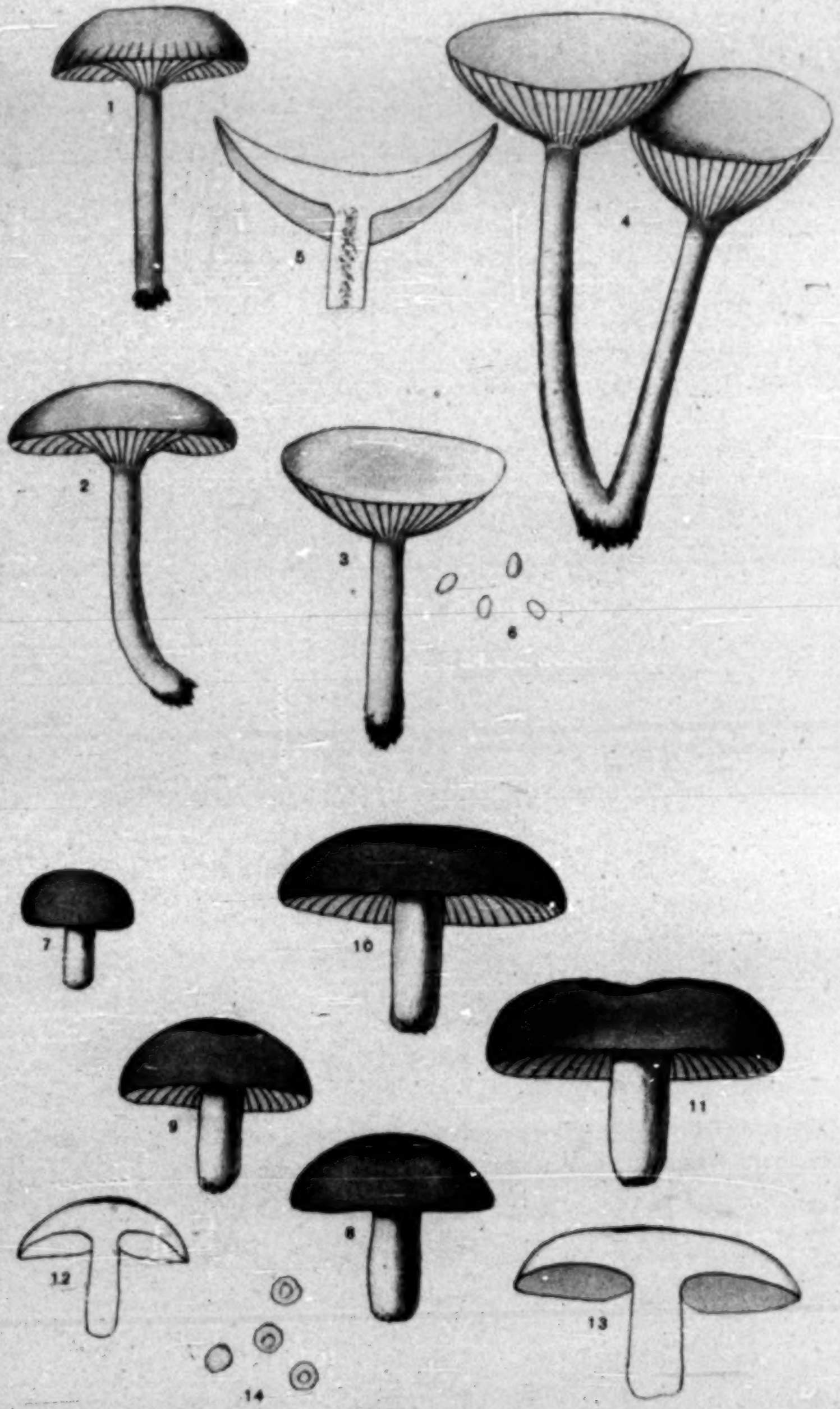


FIG. 1-6.
CLITOCYBE SUBCYATHIFORMIS PK.
SAUCER CLITOCYBE

FIG. 7-14.
RUSSULA PUSILLA PK.
SMALL RUSSULA

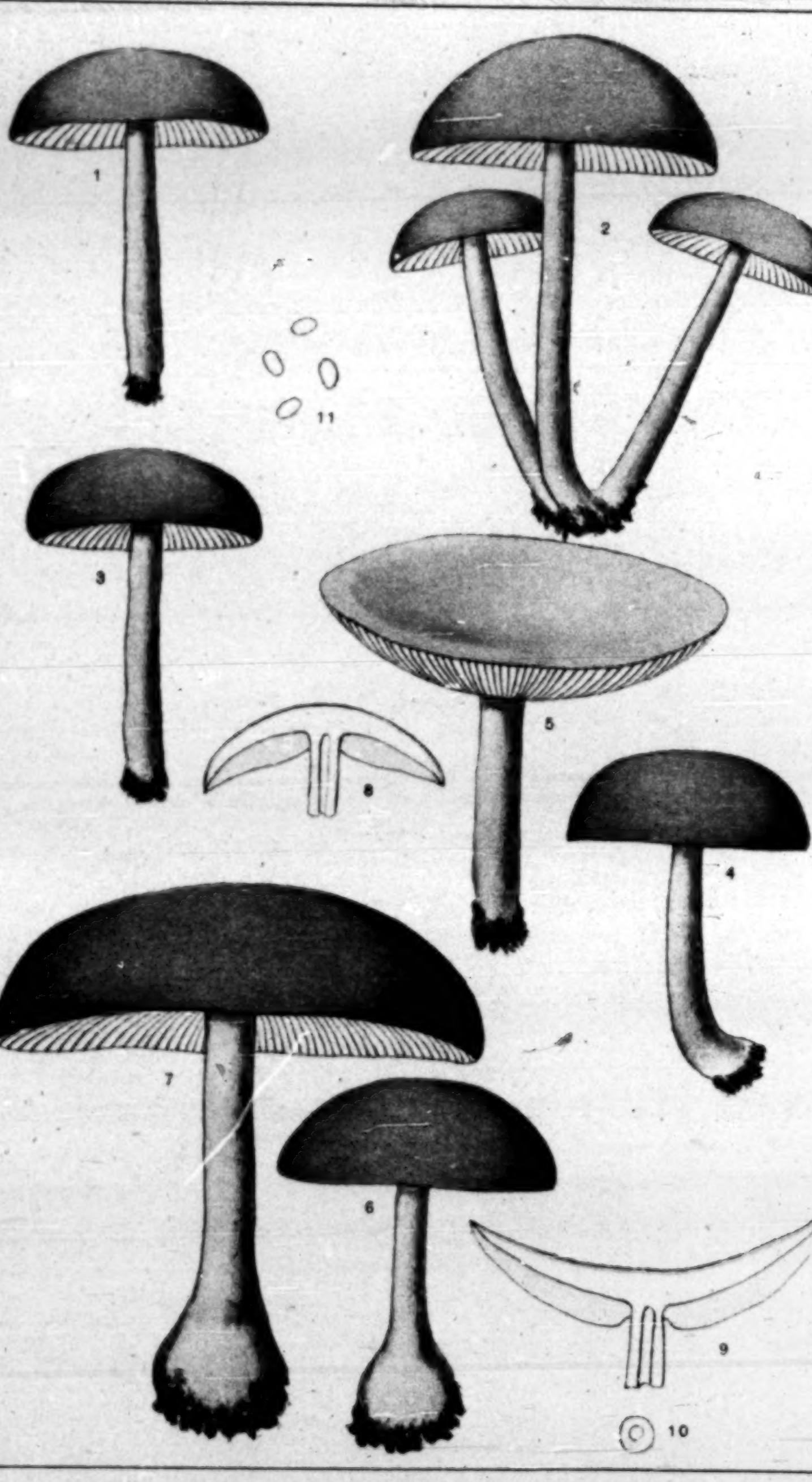
PLATE III

Collybia dryophila (Bull.) Fr.

OAK LOVING COLLYBIA

1 Immature plant
2 Cluster of three plants, two of them immature
3, 4 Two plants with the pileus more highly colored
5 Mature plant with the pileus fully expanded
6 Immature plant with pileus highly colored and stem bulbous
7 Mature plant with pileus highly colored and stem bulbous
8 Vertical section of the upper part of an immature plant
9 Vertical section of the upper part of a mature plant with expanded pileus
10 Transverse section of a stem
11 Four spores, x 400

EDIBLE FUNGI



COLLYBIA DRYOPHILA (BULL.) FR.

OAK LOVING COLLYBIA

PLATE 112

Crepidotus malachius B. & C.

SOFT SKINNED CREPIDOTUS

1 Mature plant showing the upper surface of the pileus
2 Mature plant showing the lower surface of the pileus
3 Vertical section of a mature plant
4 Four spores, x 400

Stropharia bilamellata Pk.

DOUBLE GILLED STROPHARIA

5 Immature plant with pileus convex
6 Mature plant with pileus expanded
7 Vertical section of the upper part of an immature plant
8 Vertical section of the upper part of a mature plant
9 Transverse section of a stem
10 Four spores, x 400

EDIBLE FUNGI

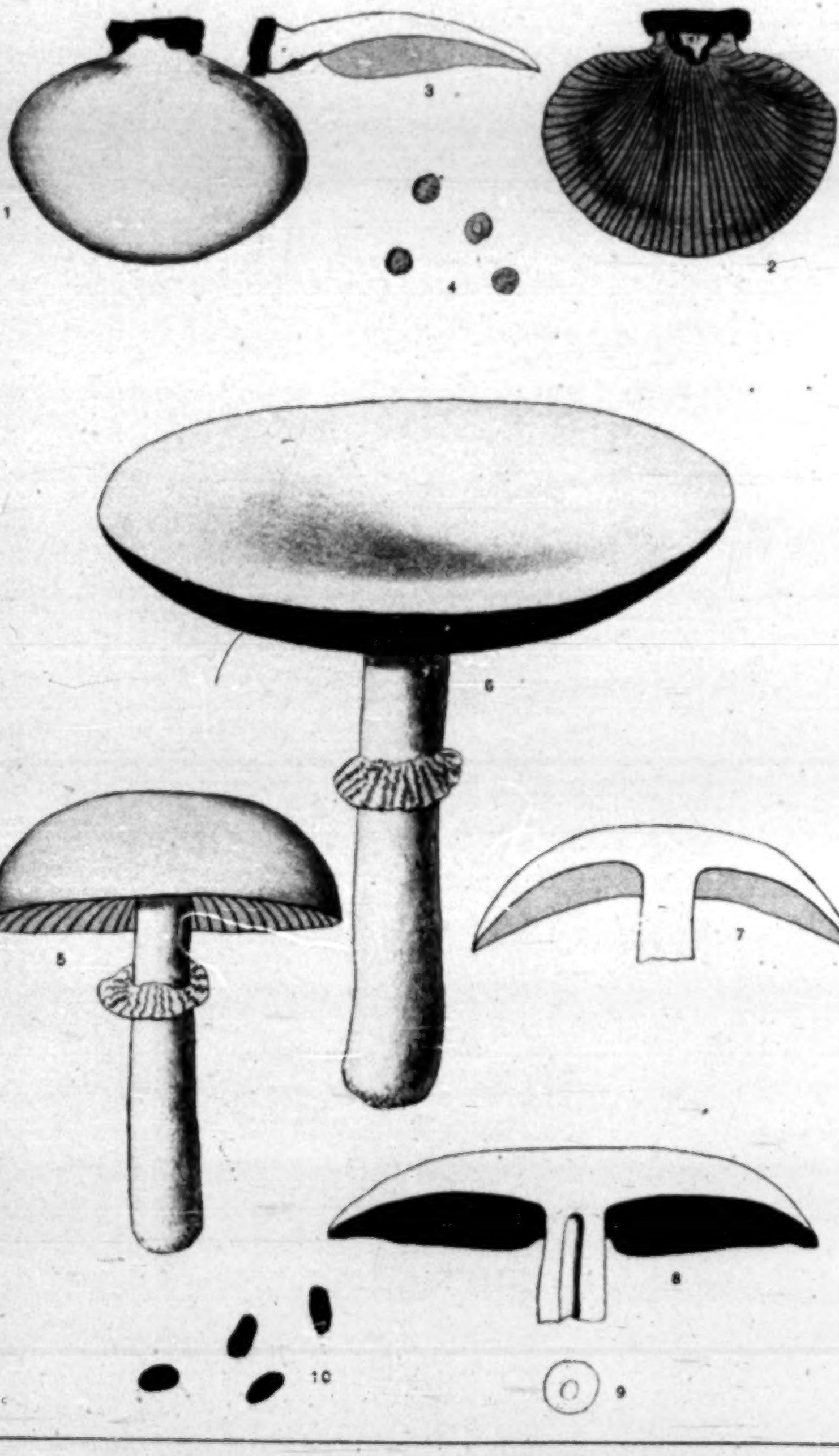


FIG. 1-4.
CREPIDOTUS MALACHIUS B. & C.
SOFT SKINNED CREPIDOTUS

FIG. 5-10.
STROPHARIA BILAMELLATA PK.
DOUBLE GILLED STROPHARIA

PLATE 113

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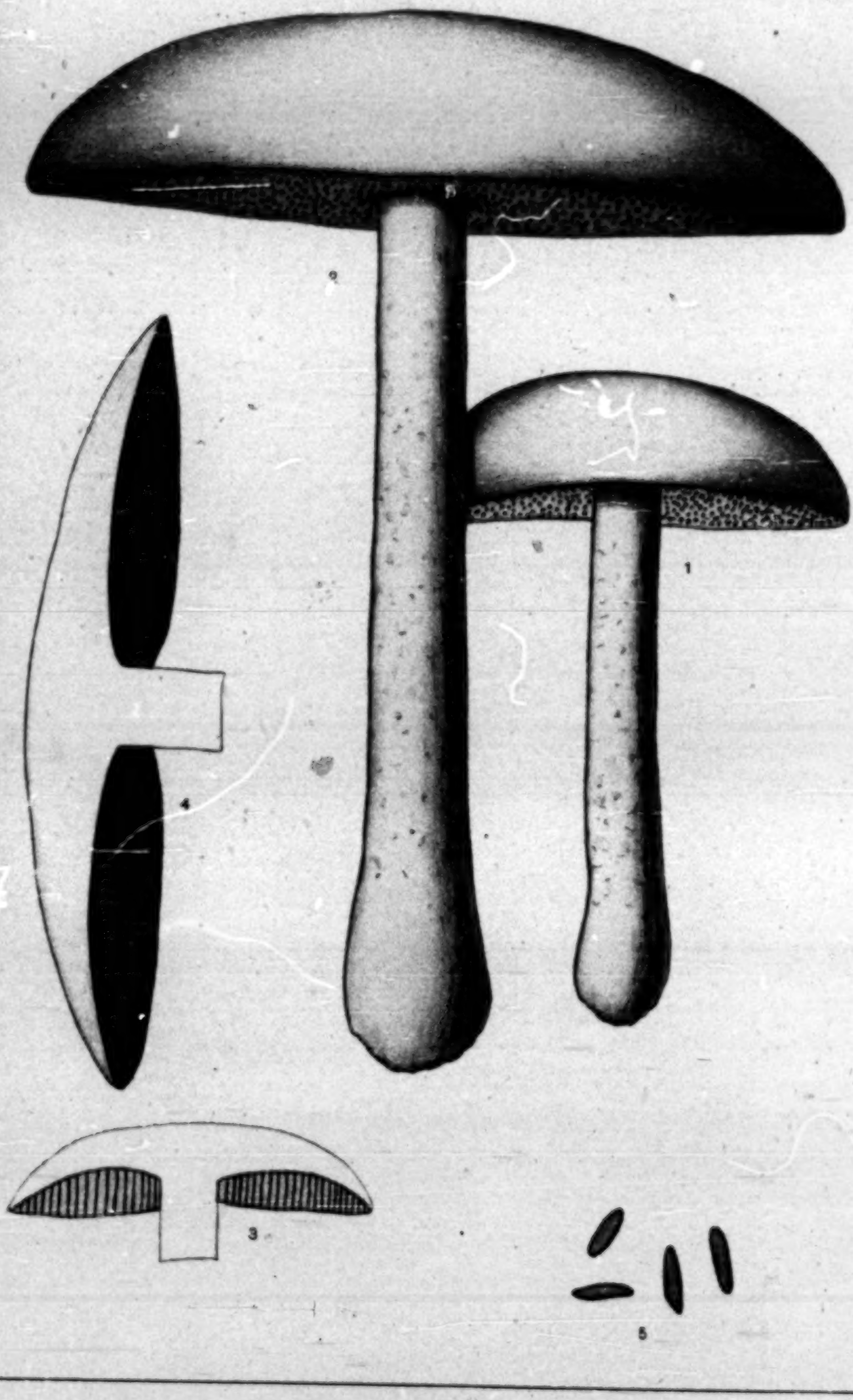
Boletus niveus Fr.

SNOWY BOLETUS

1 Immature plant
2 Mature plant
3 Vertical section of the upper part of an immature plant
4 Vertical section of the upper part of a mature plant
5 Four spores, x 400

EDIBLE FUNGI



BOLETUS NIVEUS Fr.

SNOWY BOLETUS

PLATE 114

Lycoperdon subincarnatum Pk.

Pinkish Puffball

1 Cluster of three plants
2 Plant darker colored
3 Mature plant showing pitted peridium
4 Vertical section of an immature plant
5 Vertical section of a mature plant
6 Four spores, x 400

Lycoperdon gemmatum Batsch

Studded Puffball

7 Immature plant of usual size and shape
8 Immature plant showing an umbo
9 Sessile plant showing reticulated surface from which the larger warts have fallen
10 Long stemmed plant showing plicate base of peridium and upper part of stem, also reticulated place from which the larger warts have fallen
11 Long stemmed plant with larger warts closely placed and upper part of stem coarsely pitted
12 Vertical section of a small immature plant
13 Vertical section of a mature plant with stem tapering downward
14 An old denuded discolored plant
15 Four spores, x 400

EDIBLE FUNGI

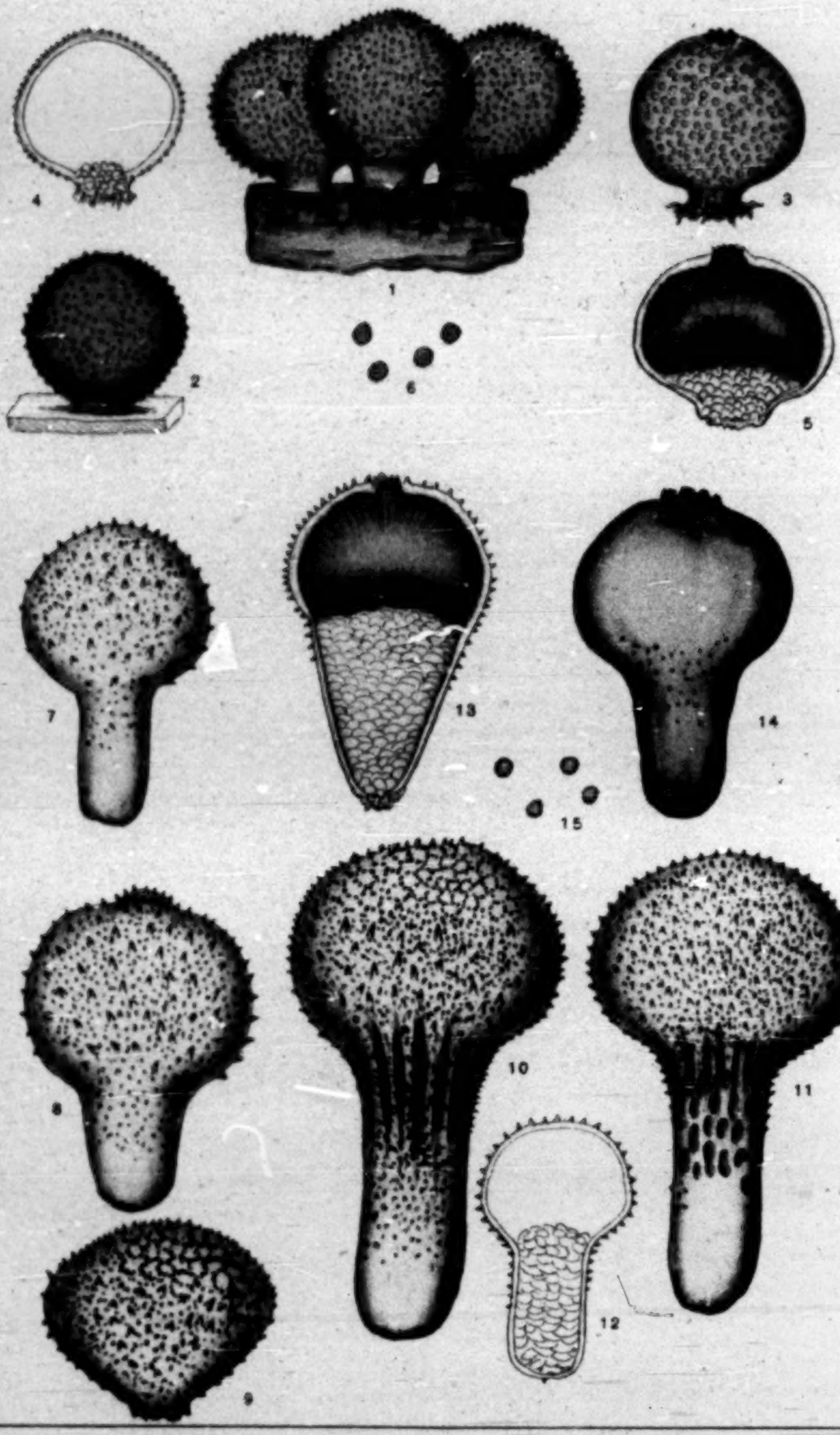


FIG. 1-6.
LYCOPERDON SUBINCARNATUM PK.
PINKISH PUFF BALL

FIG. 7-15.
LYCOPERDON GEMMATUM BATSCH
STUDDED PUFF BALL

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